Service Manual

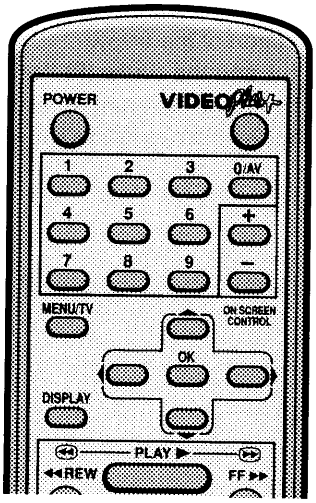
TEUKR Part No. TP30035

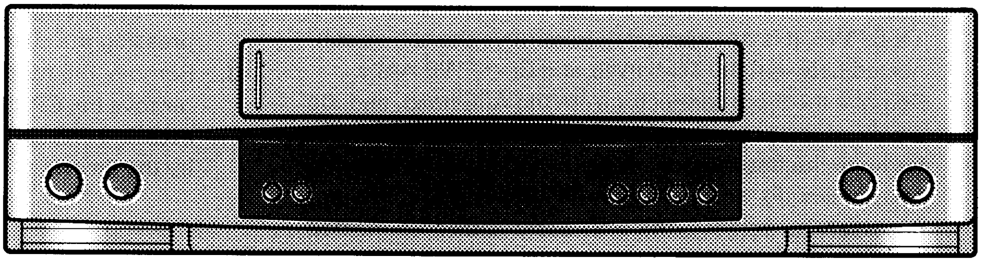
Part number for Mechanism
Service Information TP30036

Video Cassette Recorder

THORN

VR204NV





RCV8487

VHS PAL

Contents

1. DISASSEMBLY 2
2. ELECTRICAL ADJUSTMENT 6
3. TEST POINT FOR TAPE PATH ADJUSTMENT 15
4. PARTS LIST
   - ACCESSORIES 16
   - PACKING MATERIALS 16
   - CABINET & CHASSIS PARTS 16
   - MECHANISM PARTS 17
   - ELECTRICAL PARTS 20

CIRCUIT DIAGRAMS (Refer to the separate volume)

PRODUCT SAFETY NOTICE

The components designated by a symbol (⚠) in this schematic diagram designates components whose value are of special significance to product safety. Should any component designated by a symbol need to be replaced, use only the part designated in the Parts List. Do not deviate from the resistance, wattage and voltage ratings shown.

NOTE: 1. Parts order must contain Model Number, Part Number and Description.
2. N.S.P.: Not available as service parts.

1. DISASSEMBLY

1-1. REMOVAL OF CABINET, MECHANISM UNIT AND MAIN BOARD

REMOVING THE CABINET PARTS (Fig. 1.1.1)

1. Remove the cabinet and bottom cover by removing the four screws (A) and five screws (B).
2. Remove the front panel by removing the locks of the clamps (C) using a screwdriver, etc. and slightly rotating the bottom part in the direction of the arrow.

Note: Electrical adjustments for the this model can be performed with only the cabinet removed.

REMOVING THE MECHANISM MAIN UNIT (Fig. 1.1.2)

After removing the cabinet parts:

1. Remove the 12-pin connector from CN511 and the two screws (D), and then remove the PW-1 PWB Ass'y.
2. Remove the two red screws (E), and then remove the TN-5 PWB. It is not necessary to remove the cables connected between the TN-5 PWB and CP-1 PWB Ass'y.
3. Remove the 6-pin connector from the ACE head, and the 2-pin connector and 24-wire flat cable from the MC-2 PWB.
4. Remove the flat cable from the cylinder Ass'y, then the two screws (F), and finally the VP-1PWB Ass'y. It is not necessary to remove the two party cables connected between the VP-1 PWB Ass'y and CP-1 PWB Ass'y .
5. Remove the mechanism main unit by removing the two screws (G) and two screws (H). Remove, as well, the two screws (J) at the cassette tray side while pressing the tray lock lever as shown in the enlarged view and pushing the cassette tray to the position where the two screws (J) appear.

REMOVING THE CP-1 PWB ASSEMBLY (Fig. 1.1.3)

After removing the cabinet parts and the mechanism unit:

1. Pull out the TM-1 PWB Ass'y from CN301 and CN302 while pressing and spreading out the four clamps (K) as shown by the arrows.
2. Remove the holder set to the opening of the chassis, while pressing the clamp in the direction of the arrow.
3. Remove the two red screws (L). and the screw (P). Next, remove the CP-1 PWB Ass'y by lifting it straight up while pressing and spreading out the two clamps (M) as shown by the arrows.

M-TP4H/E-1

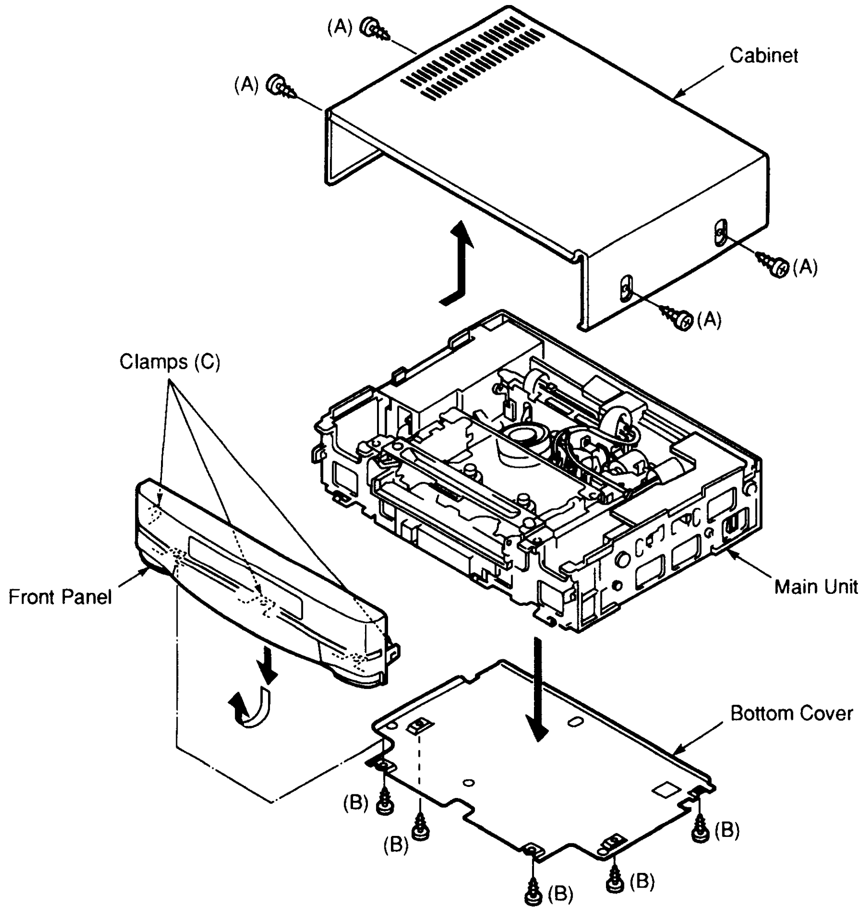


Fig. 1.1.1

M-TP4H/E-2

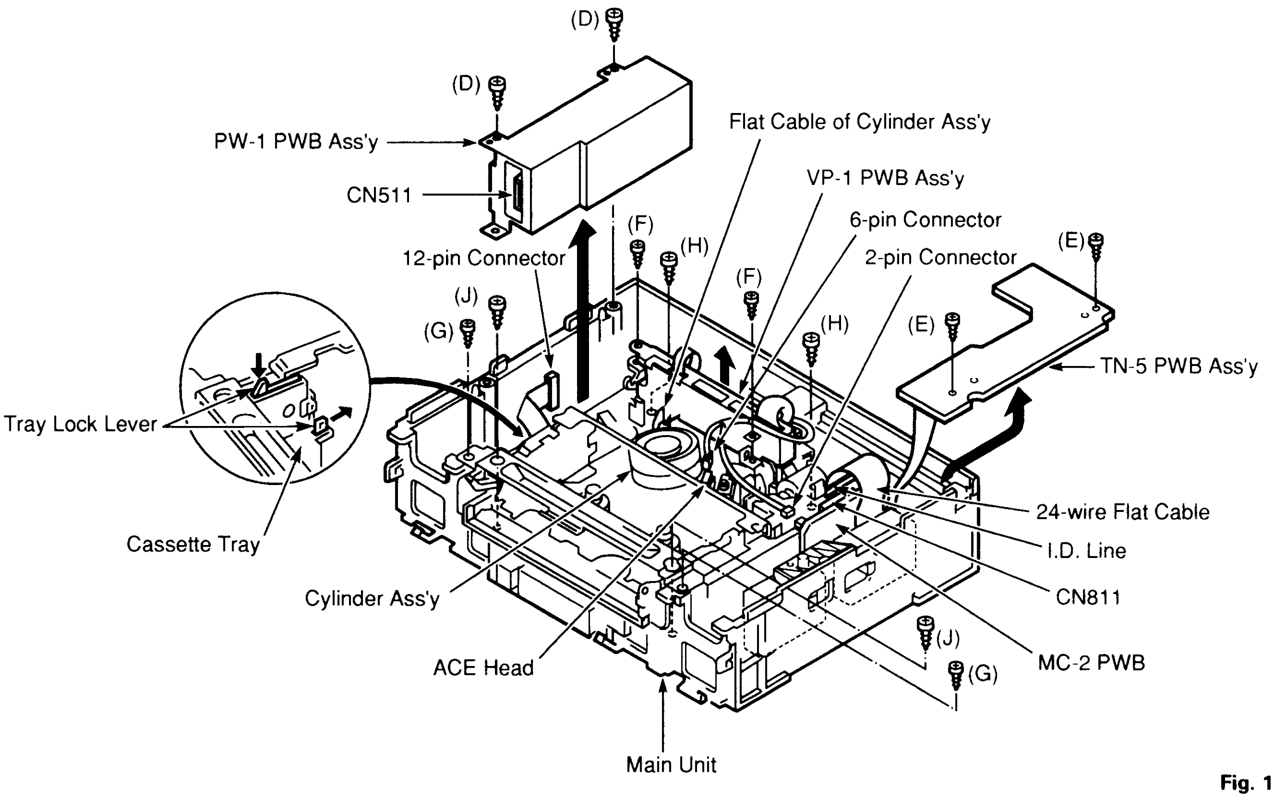

(D)
(D)
PW-1 PWB Ass'y
CN511
12-pin Connector
(F)
(H)
Flat Cable of Cylinder Ass'y
VP-1 PWB Ass'y
6-pin Connector
2-pin Connector
(E)
(F)
(H)
(E)
(J)
(G)
TN-5 PWB Ass'y
Tray Lock Lever
Cassette Tray
24-wire Flat Cable
I.D. Line
Cylinder Ass'y
CN811
ACE Head
(J)
(G)
MC-2 PWB
Main Unit

Fig. 1.1.2

M-TP4H/E-3

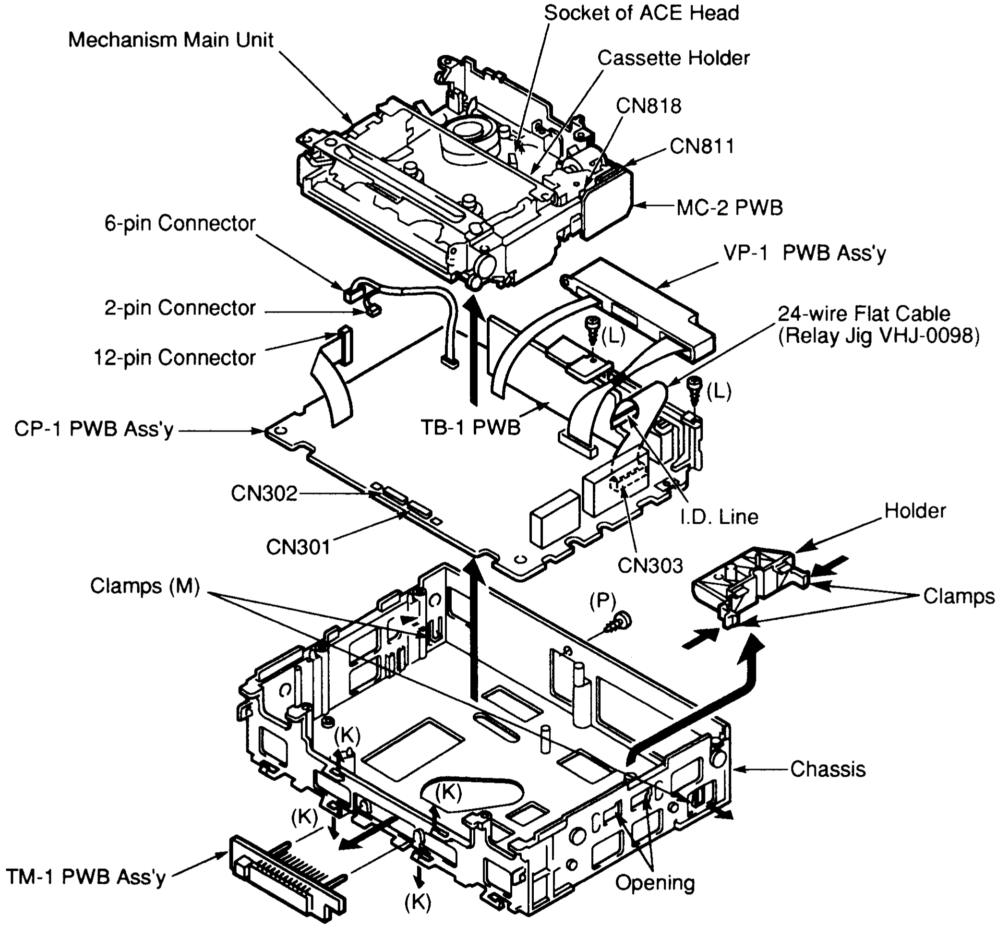

Socket of ACE Head
Mechanism Main Unit
Cassette Holder
CN818
CN811
MC-2 PWB
6-pin Connector
VP-1 PWB Ass'y
2-pin Connector
24-wire Flat Cable
(Relay Jig VHJ-0098)
(L)
12-pin Connector
(L)
CP-1 PWB Ass'y
TB-1 PWB
CN302
I.D. Line
Holder
CN301
CN303
Clamps (M)
(P)
Clamps
(K)
(K)
Chassis
(K)
TM-1 PWB Ass'y
(K)
Opening

Fig. 1.1.3

TEMPORARILY SETTING UP AND CONNECTING MAIN PWB ASSEMBLY

The following is an example of how to place and connect the main PWB not requiring a jig, when repairing the CP-1 PWB assembly (Fig. 1.1.4)

1. Place the mechanism main unit at the fixed position on the chassis.
2. Insert the VP-1 PWB Ass'y at the fixed position of the mechanism unit and connect the flat cable of the Cylinder Ass'y.
3. Connect the 24-wire flat cable and the 2-pin connector to the MC-2 PWB, and then connect the 6-pin connector to the ACE head.
4. Connect the TM-1 PWB Ass'y to operate the VCR by using the remote control, and then connect the 12-pin connector to the CN511 for the PW-1 PWB Ass'y.
5. Place the CP-1 PWB Ass'y above the mechanism main unit along the cassette holder. Insert the tip (N) of the terminal board into the opening (O) at the side of the chassis, as shown in the enlarge view.

M-TP4H/E-4

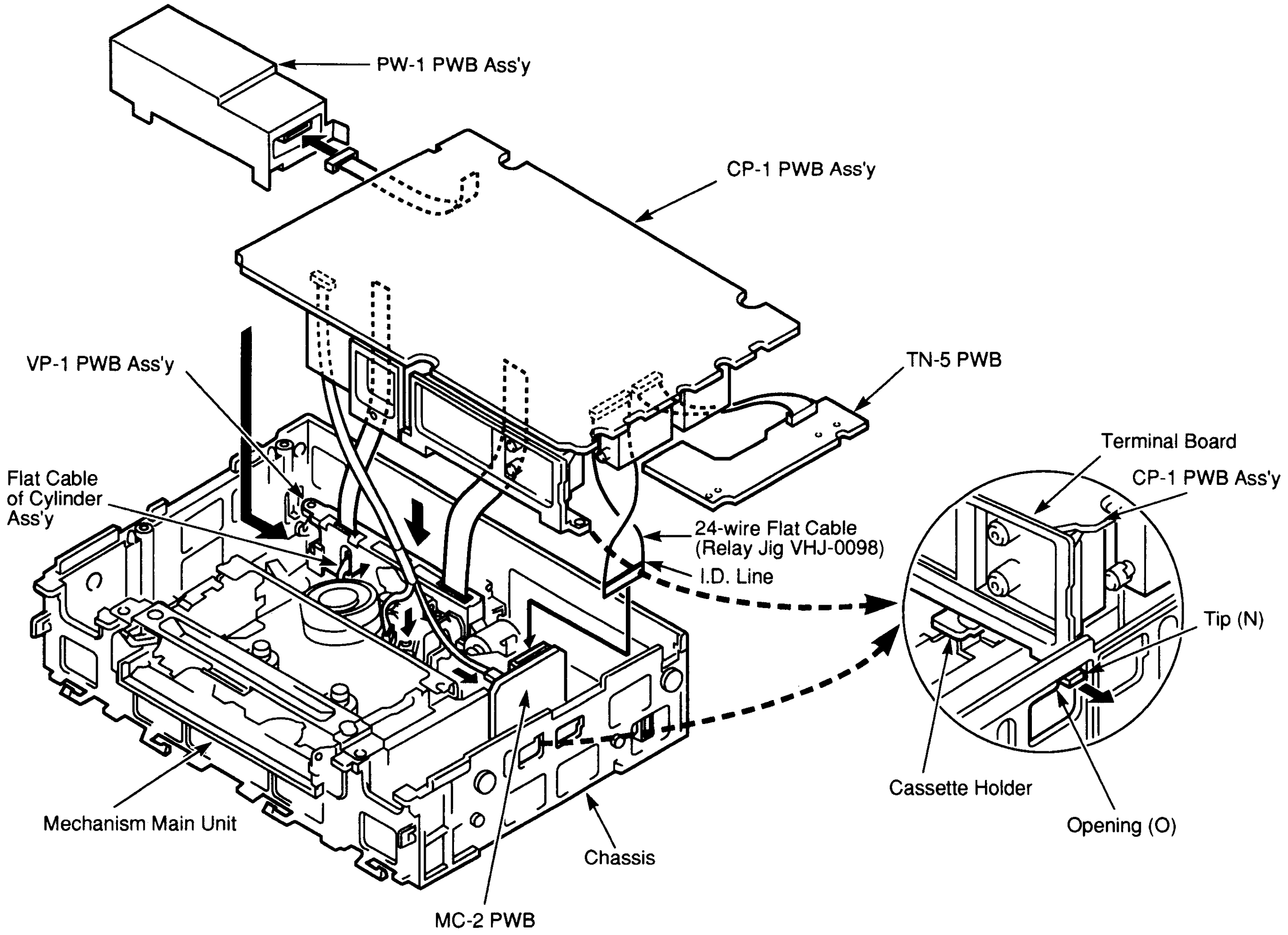

PW-1 PWB Ass'y
CP-1 PWB Ass'y
VP-1 PWB Ass'y
TN-5 PWB
Terminal Board
CP-1 PWB Ass'y
Flat Cable of Cylinder Ass'y
24-wire Flat Cable (Relay Jig VHJ-0098)
I.D. Line
Tip (N)
Cassette Holder
Opening (O)
Mechanism Main Unit
Chassis
MC-2 PWB

Fig. 1.1.4

1-2. MAIN CIRCUIT BOARD

L-TP4H/E

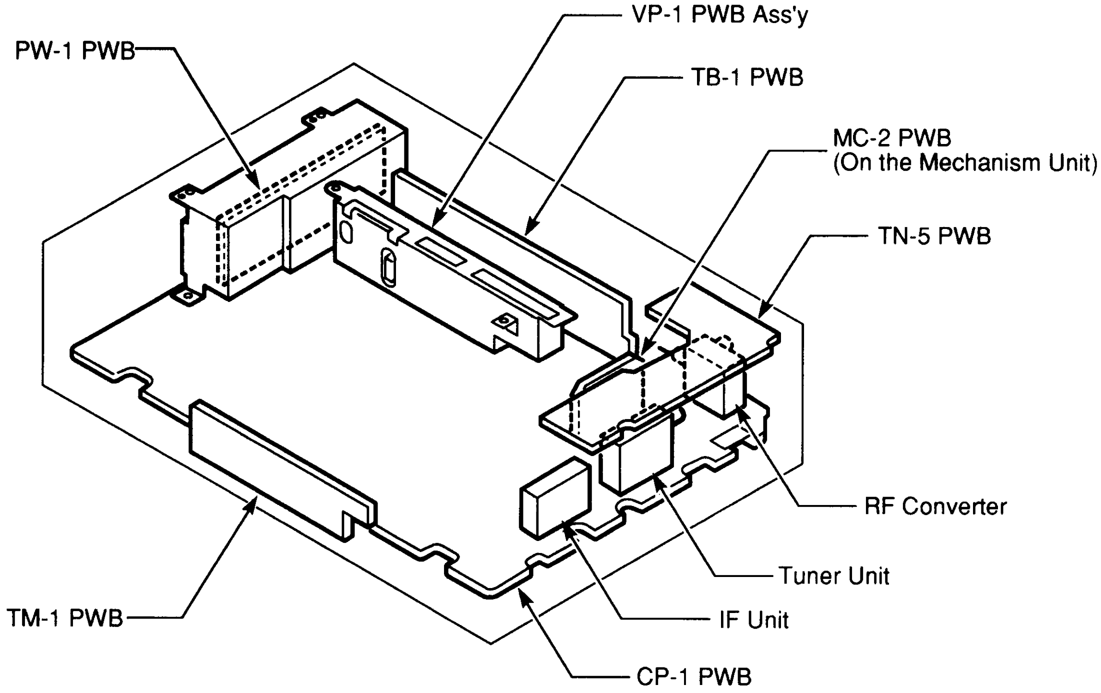

VP-1 PWB Ass'y
PW-1 PWB
TB-1 PWB
MC-2 PWB
(On the Mechanism Unit)
TN-5 PWB
RF Converter
Tuner Unit
TM-1 PWB
IF Unit
CP-1 PWB

Fig. 1.2.1

2. ELECTRICAL ADJUSTMENT

PREPARATION

This VCR need 4 basic presetting by using the menus displayed on-screen.
After all connection have been made, then follow steps 1 to 4 to preset the VCR.
The 4 presetting steps will be displayed in sequence on TV screen. The setting are entered with the remote control.

Turn on the VCR

1. Adjusting the TV receiver to the video channel: The WELCOME screen will appear. When the video channel has been preset, press the OK button on the remote control.
2. Language selection: Select the desired language, then press the OK button.
3. Clock setting: Using the remote control numeric buttons, enter the date and time, press the OK button.
4. Tuning control adjustments: When the channel position has been preset, press the MENU/TV button.
   When steps 1 to 4 have been finish, ready to operate the all operating mode.

2-1. SERVO CIRCUIT ADJUSTMENT

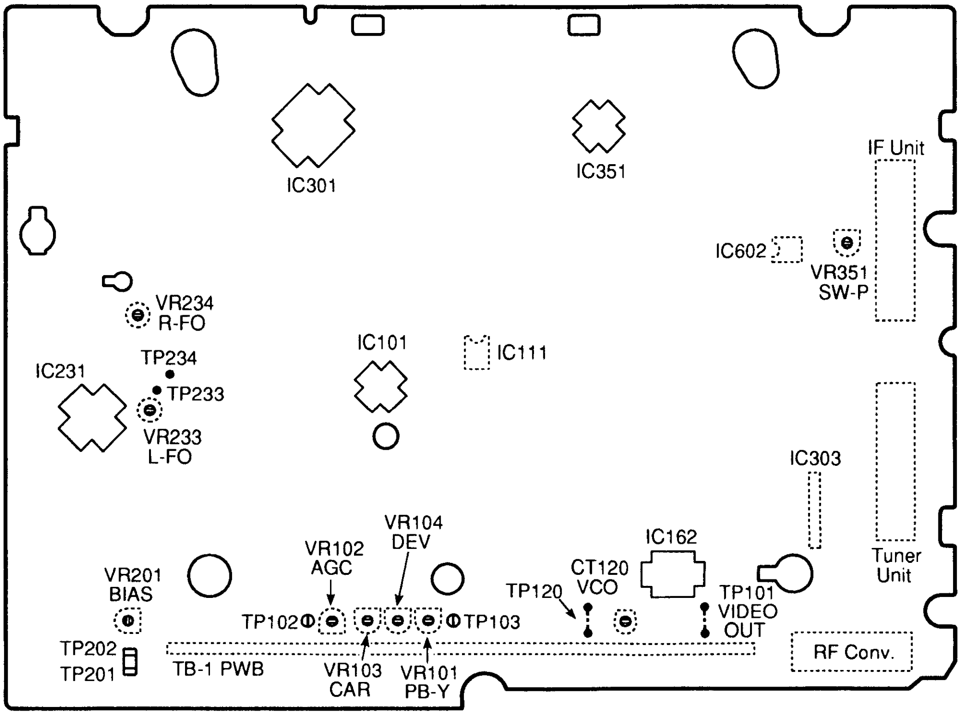
- These adjustments should be carried out upon completion of the tape transport adjustments.
- If the tape transport adjustments (except the tilt adjustment) are carried out after these adjustments, follow the procedures again in Section 2-1-3. SWITCHING POSITION ADJ.
- When a cassette tape is loaded, auto-tracking will be set immediately after starting the first playback. As this will deviate the tracking center set, be sure to press the channel buttons (+) or (–) once directly after starting playback to prevent auto-tracking from being set.

2-1-1. TEST EQUIPMENT AND STANDARDS REQUIRED

Oscilloscope	Vertical sensitivity: 5 mV/DIV, external trigger Band width: more than 10 MHz
Test Tape	VHJ-0009 or VHJ-0023: SP mode, monoscope, 6 KHz
Blank Tape	VHS-type cassette tape
Monitor TV	

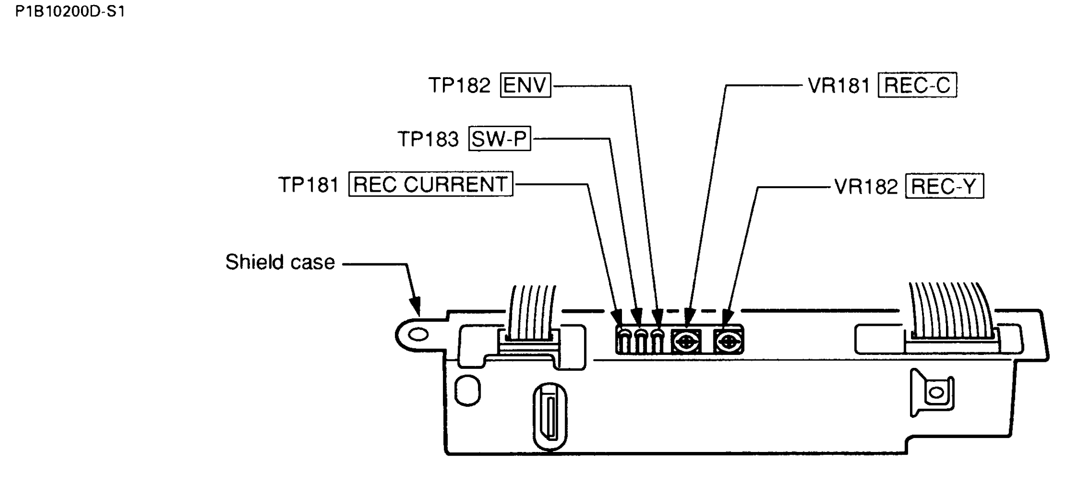
2-1-2. LOCATION OF ADJUSTMENT POINTS

P1B10500D-S1


IC301
IC351
IF Unit
IC602
VR351
SW-P
VR234
R-FO
IC231
TP234
TP233
VR233
L-FO
IC101
IC111
IC303
VR104
DEV
VR102
AGC
IC162
CT120
VCO
VR201
BIAS
TP120
TP101
VIDEO
OUT
Tuner
Unit
TP102
TP103
TP202
TP201
TB-1 PWB
VR103
CAR
VR101
PB-Y
RF Conv.

CP-1 PWB (FOIL SIDE)

Fig. 2.1.1


P1B10200D-S1
TP182 ENV
TP183 SW-P
TP181 REC CURRENT
Shield case
VR181 REC-C
VR182 REC-Y

VP-1 PWB ASS'Y

Fig. 2.1.2

NOTE:

- Self-recording means "Record any broadcasting or video signal and play back the just-recorded portion".

2-1-3. SWITCHING POSITION ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
TP101 (VIDEO OUT) TP183 (SW-P)	Oscilloscope	PLAY(SP)mode Test tape (VHJ-0009 or VHJ-0023)

ADJ. Location	ADJ. Value
VR351 (SW-P)	6.5 H ± 0.5 H

1. Set the tracking control position to the center by pressing CHANNEL buttons (+) and (–) simultaneously.
   (Tracking center position display in the indicator panel "T –:– ")
2. Adjust VR351 (SW-P) so that the width "T" becomes **6.5 H ± 0.5 H** as shown in Fig. 2.1.3.

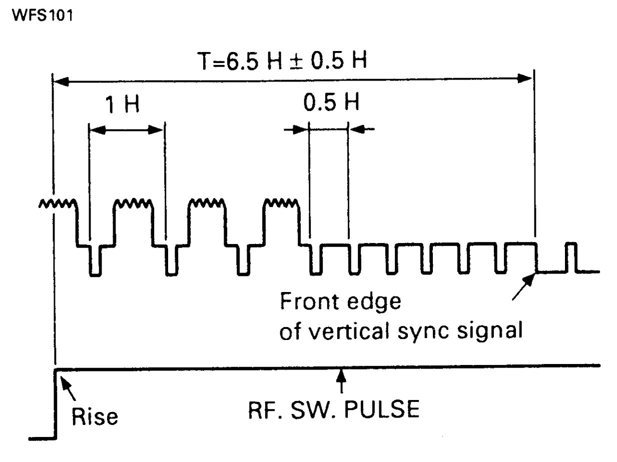

WFS101
T=6.5 H ± 0.5 H
1 H
0.5 H
Front edge of vertical sync signal
Rise
RF. SW. PULSE

Fig. 2.1.3

2-1-4. STILL V-LOCK ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
Picture of monitor TV	Color bar generator or Broadcasting Monitor	Self-recording (SP mode) STILL mode Blank tape
		Self-recording (LP mode) STILL mode Blank tape

ADJ. Location	ADJ. Value
CHANNEL (+) button CHANNEL (–) button	The minimum vertical shake

1. Play back the just-recorded portion and then set the VCR in the STILL mode.
2. Press the CHANNEL (+) button or the CHANNEL (–) button so that any vertical shake of the picture is brought to its minimum.

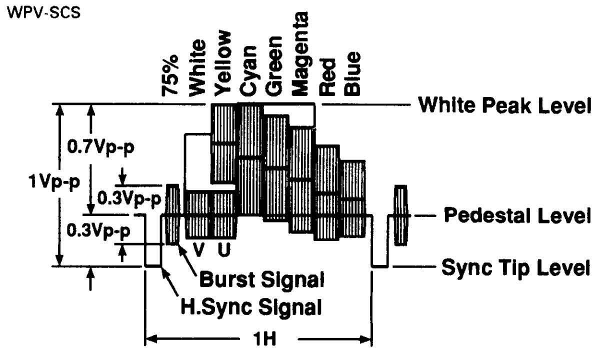
2-2. VIDEO CIRCUIT ADJUSTMENT

- Before making the following adjustments, Section 2-1. SERVO CIRCUIT ADJUSTMENT should be completed.
- Use the relay jig to provide simple adjustment of the VP-1 PWB Ass'y.

2-2-1. TEST EQUIPMENT AND STANDARDS REQUIRED

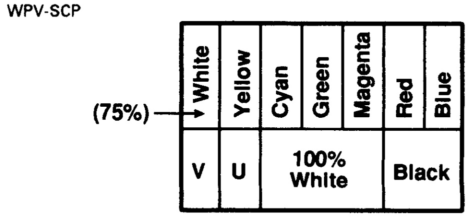
Color Bar Signal Generator	PAL Color bar signel with 100% white level (EBU color bar signel) (Signal waveform is described below. Refer to Fig. 2.2.1)
Oscilloscope	Vertical sensitivity: 5 mV/DIV, external trigger Band width: more than 10 MHz
Digital Voltmeter	DC range
Test Tape	VHJ-0008 or VHJ-0023: SP mode, color bar, 1 kHz (Color bar signal waveform is described below. Refer to Fig. 2.2.3)
Blank Tape	VHS-type cassette tape
Oscilloscope Probe	Input capacity: less than 25 pF (10:1) less than 40 pF (1:1) Covering frequency: DC ~ 40 MHz (10:1) DC ~ 30 MHz (1:1)
Frequency Counter	8 significant digits
Adjustment Relay Jig	VHJ-0067: 12-wire flat cable for VP-1 PWB Ass'y

PAL TV TEST SIGNAL


WPV-SCS
75%
White
Yellow
Cyan
Green
Magenta
Red
Blue
White Peak Level
0.7Vp-p
1Vp-p
0.3Vp-p
0.3Vp-p
Pedestal Level
V U
Sync Tip Level
Burst Signal
H.Sync Signal
1H

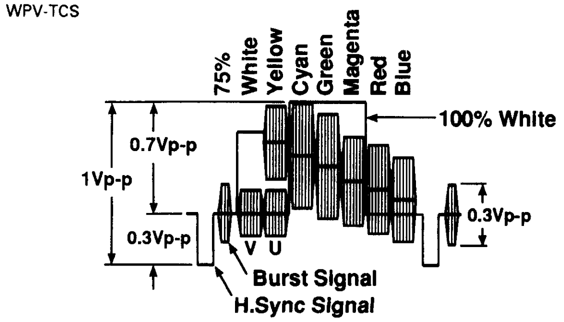
COLOR BAR SIGNAL WAVEFORM

Fig. 2.2.1


WPV-SCP
(75%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
V
U
100% White
Black

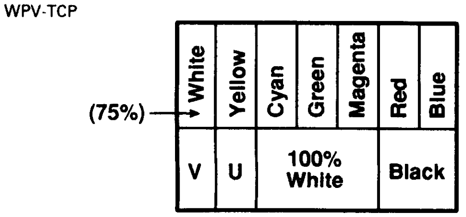
COLOR BAR PATTERN MONITOR TV

Fig. 2.2.2


WPV-TCS
75%
White
Yellow
Cyan
Green
Magenta
Red
Blue
100% White
0.7Vp-p
1Vp-p
0.3Vp-p
0.3Vp-p
V U
Burst Signal
H.Sync Signal

COLOR BAR SIGNAL WAVEFORM (VHJ-0008)

Fig. 2.2.3

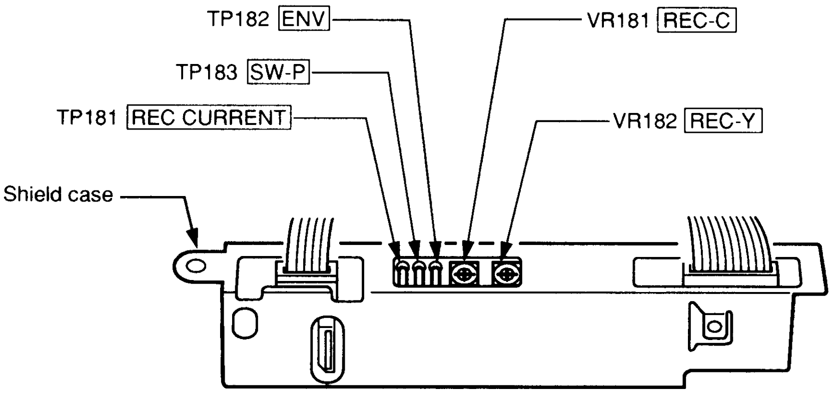

WPV-TCP
(75%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
V
U
100% White
Black

COLOR BAR PATTERN (VHJ-0008) ON MONITOR TV

Fig. 2.2.4

2-2-2. LOCATION OF ADJUSTMENT POINTS

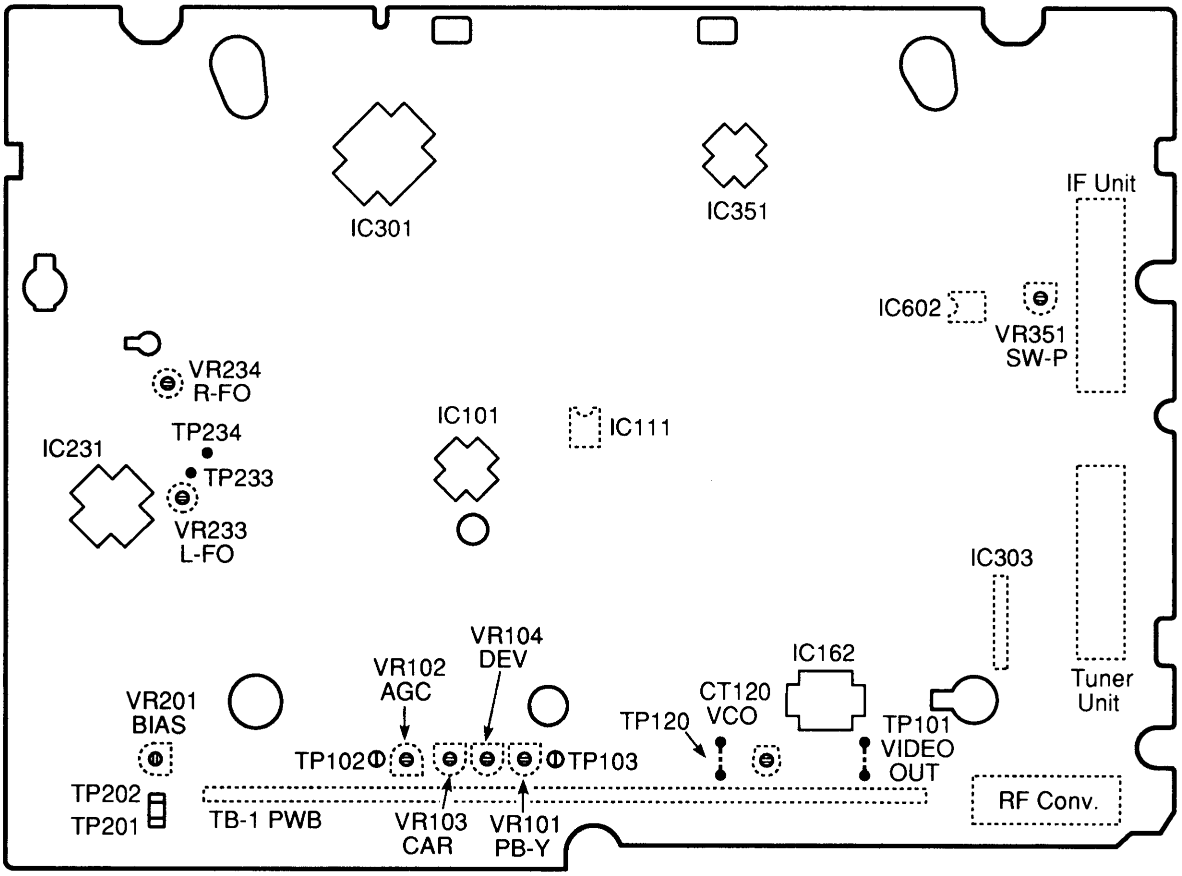
P1B10200D-V1


TP182 ENV
TP183 SW-P
TP181 REC CURRENT
Shield case
VR181 REC-C
VR182 REC-Y

VP-1 PWB ASS'Y

Fig. 2.2.5

P1B10500D-V1


IC301
IC351
IF Unit
IC602
VR351
SW-P
VR234
R-FO
IC231
TP234
TP233
VR233
L-FO
IC101
IC111
IC303
Tuner Unit
VR104
DEV
VR102
AGC
IC162
CT120
VCO
VR201
BIAS
TP120
TP101
VIDEO
OUT
TP102
TP103
TP202
TP201
TB-1 PWB
VR103
CAR
VR101
PB-Y
RF Conv.

CP-1 PWB (FOIL SIDE)

Fig. 2.2.6

2-2-3. ADJUSTMENT RELAY JIG

Connect the Flat cable end from the Cylinder Ass'y to the VP-1 PWB Ass'y using the Relay jig to provide simple repairing and adjustment of the VP-1 PWB Ass'y, as shown in Fig. 2.2.7. Further, when adjusting the VP-1 PWB Ass'y, be sure to make contact an end of Shield case with Bracket of the VP-1 PWB Ass'y to maintain the shield effect. If the VP-1 PWB Ass'y does not contact, there is insufficient ground and no proper play back image can be obtained.

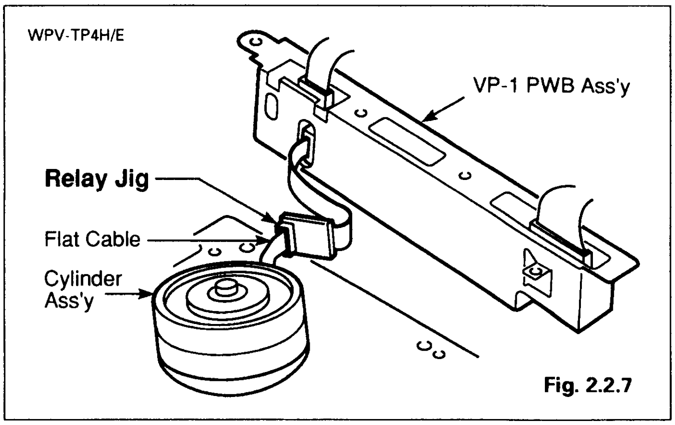


Fig. 2.2.7

NOTES:
- Self-recording means "Record the video signal and play back the just-recorded portion".
- Connect the monitor TV to the VIDEO OUTPUT terminal (EURO-AV1 terminal pin 19), before making following adjustments.

2-2-4. AGC LEVEL ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
TP102	Color bar generator Oscilloscope (10:1 probe)	E-E mode

ADJ. Location	ADJ. Value
VR102 (AGC)	0.5 Vp-p ± 0.025 Vp-p

1. Connect the color bar generator to the VIDEO INPUT terminal (EURO-AV1 pin20).
2. Adjust VR102 (AGC) for **0.5 Vp-p ± 0.025 Vp-p** as shown in Fig. 2.2.8.

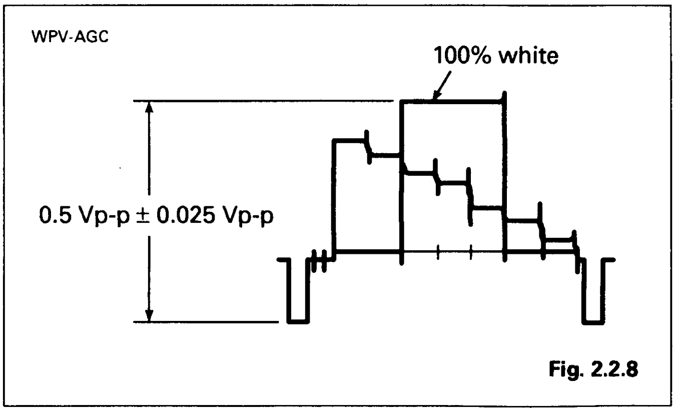


Fig. 2.2.8

2-2-5. PB-Y LEVEL ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
TP101	Oscilloscope	PLAY(SP)mode Test tape (VHJ-0008 or VHJ-0023)

ADJ. Location	ADJ. Value
VR101 (PB-Y)	1 Vp-p ± 0.05 Vp-p

1. Play back a test tape in SP mode.
2. Adjust VR101 (PB-Y) for the video luminance signal level of **1 Vp-p ± 0.05 Vp-p**. (Refer to Fig. 2.2.9)

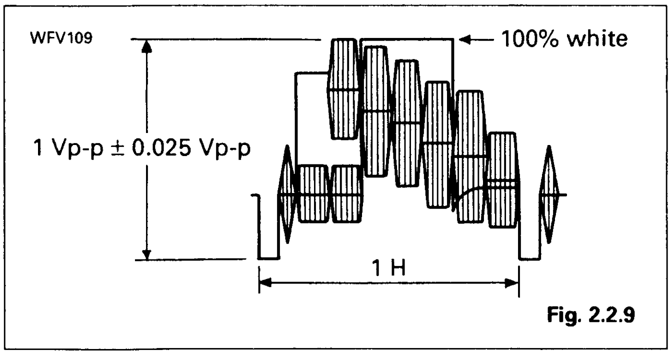


Fig. 2.2.9

2-2-6. CARRIER SET ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
TP103	Color bar generator Frequency counter	REC (SP) mode

ADJ. Location	ADJ. Value
VR103 (CAR)	3.83 MHz ± 0.05 MHz

1. Connect the color bar generator to the VIDEO INPUT terminal (EURO-AV1 pin 20).
2. After removing the first color bar signal input from the video input terminal, immediately adjust VR103 (CAR) so that the frequency becomes **3.83 MHz ± 0.05 MHz.**

2-2-7. VCO (on screen assist) ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
TP120	Color bar generator Digital voltmeter	E-E mode

ADJ. Location	ADJ. Value
CT120 (VCO)	2.5 Vp-p ± 0.3 Vp-p

1. Connect the digital voltmeter (DC range) to TP120 and GND.
2. Adjust CT120 (VCO) so that the voltage is **2.5 V ± 0.3 V.**

2-2-8. DEVIATION ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
TP101	Color bar generator Oscilloscope	Self-recording (SP) mode Blank tape

ADJ. Location	ADJ. Value
VR104 (DEV)	1 Vp-p ± 0.05 Vp-p

1. Record the color bar signal on the blank tape.
2. Play back of the just-recorded portion.
3. Adjust VR104 (DEV) for **1 Vp-p ± 0.05 Vp-p** as shown in Fig. 2.2.10.
4. If the adjustment value is not satisfactory, adjust VR104 (DEV) and repeat steps 2 to 3.

WPV-DEV

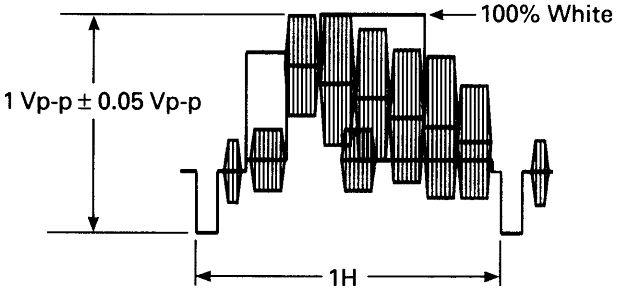


Fig. 2.2.10

2-2-9. C REC CURRENT ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
TP181 (on VP-1 PWB)	Color bar generator Oscilloscope (1:1 probe)	REC (SP) mode Blank tape

ADJ. Location	ADJ. Value
VR181 (REC-C)	150 mVp-p ± 5 mVp-p

1. Connect the ground of the oscilloscope to the shield case of the VP-1 PWB Ass'y.
2. Adjust VR182 (REC-Y) for the minimum video luminance signal level.
3. Adjust VR181 (REC-C) so that the video chrominance signal level is **150 mVp-p ± 5 mVp-p**. (Refer to Fig. 2.2.11)

WV-CREC

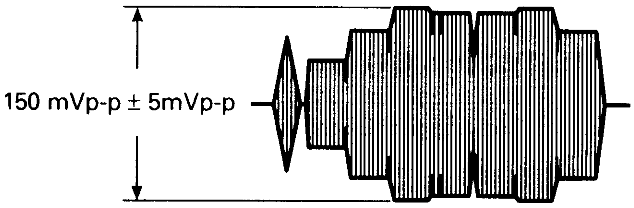


Fig. 2.2.11

2-2-10. Y REC CURRENT ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
TP181 (on VP-1 PWB)	Color bar generator Oscilloscope (1:1 probe)	REC(SP)mode Blank tape

ADJ. Location	ADJ. Value
VR182 (REC-Y)	470 mVp-p ± 10 mVp-p

1. Connect the ground of the oscilloscope to the shield case of the VP-1 PWB Ass'y.
2. Adjust VR182 (REC-Y) so that the video luminance signal level at the sync tip is **470 mVp-p ± 10 mVp-p**. (Refer to Fig. 2.2.12)

WV-YREC

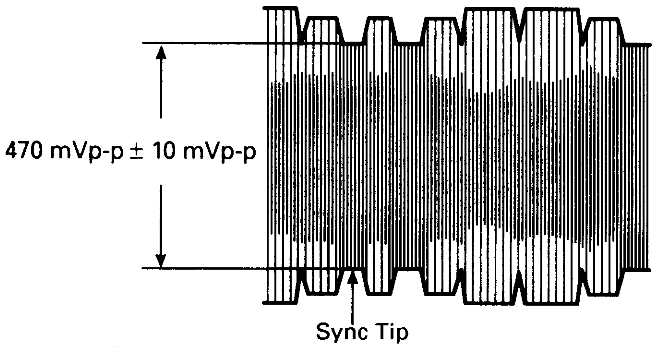


Fig. 2.2.12

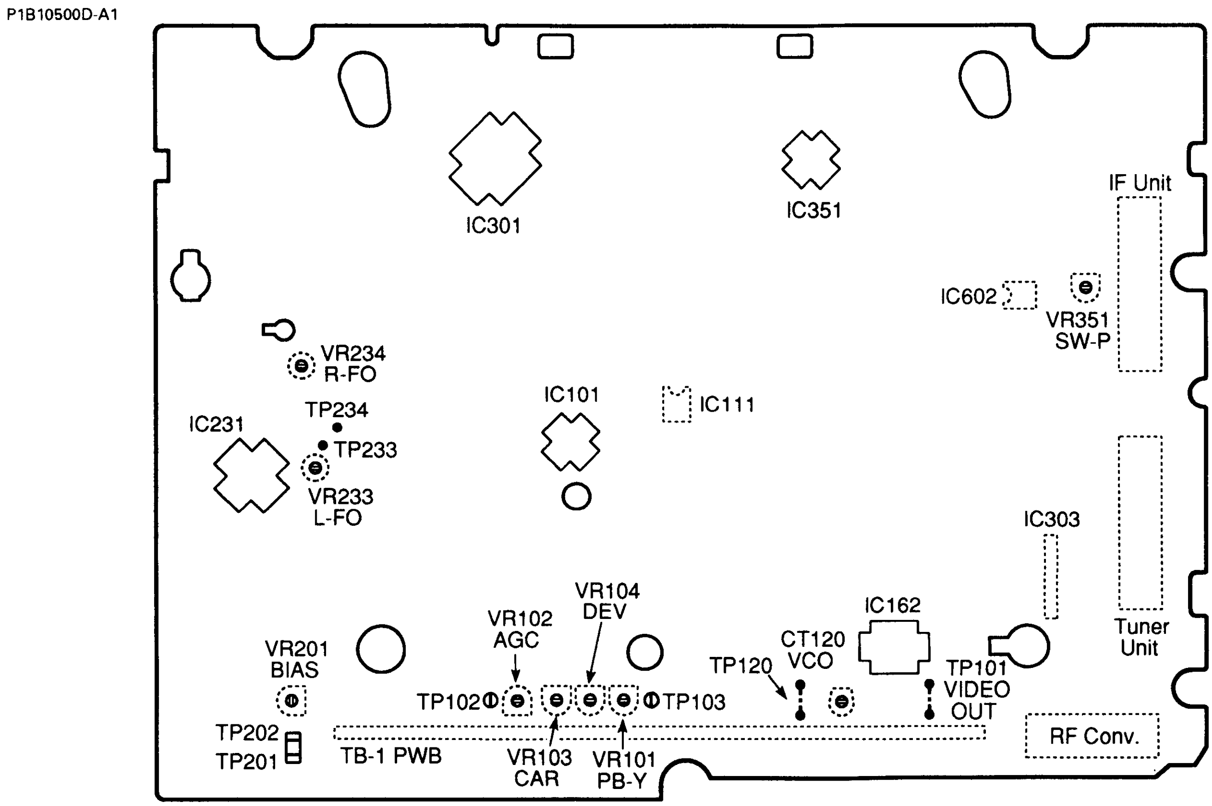
2-3. AUDIO FM (Hi-Fi)/ NORMAL CIRCUIT ADJUSTMENT

- Before making these adjustments, (especially, the tape guide height and audio control erase head height adjustments) should be carried out, so that the tape traveling between the loading guide pole and the audio control erase head runs without fluttering, twisting, curling.
- Before making these adjustments, Section 2-1. SERVO and Section 2-2. VIDEO circuit adjustments should be carried out.

2-3-1. TEST EQUIPMENT AND STANDARDS REQUIRED

Standard Audio Signal Generator (SG)	Output frequency : 10 Hz ~ 100 kHz Output level : more than 1 Vrms Output impedance : 600 Ω Distortion ratio : less than 0.1% Output in use SG : Frequency: .... 1 kHz, 10 kHz (switchable) Output level: .... –33.8 dBs ± 0.5 dB
Color Bar Signal Generator	Color bar signel with 100% white level. (Signal waveform is described before. Refer to Fig. 2.2.1)
Oscilloscope	Vertical sensitivity : 10 mV/DIV Band width : more than 30 MHz
AC Voltmeter	Effective value indication Input frequency : 10 Hz ~ 20 kHz Input Impedance : more than 1 MΩ Measurement level : 1mV (full scale)
Frequency Counter	Input frequency : 20 Hz ~ 10 MHz
Blank Tape	VHS-type cassette tape

2-3-2. LOCATION OF ADJUSTMENT POINTS


P1B10500D-A1
IC301
IC351
IF Unit
IC602
VR351
SW-P
VR234
R-FO
IC101
IC111
IC231
TP234
TP233
VR233
L-FO
IC303
VR104
DEV
VR102
AGC
IC162
CT120
VCO
VR201
BIAS
TP120
TP101
VIDEO
OUT
Tuner
Unit
TP102
TP103
TP202
TP201
TB-1 PWB
VR103
CAR
VR101
PB-Y
RF Conv.

CP-1 PWB (FOIL SIDE)

Fig. 2.3.1

AUDIO NORMAL CIRCUIT

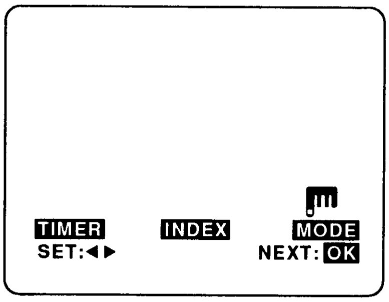
NOTES:

- Set the following switch or On-screen menu to the positions indicated below, before making following adjustments.

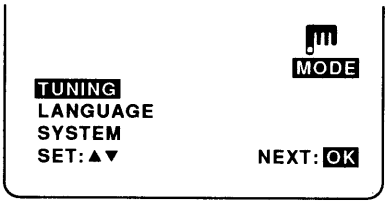
SWITCH or ON-SCREEN MENU	POSITION
TAPE SPEED	SP
O/AV	AV
AV	AV1
AUDIO	MONO

To select AV and AUDIO mode

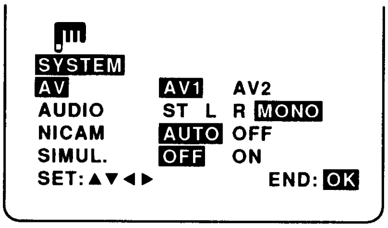
1. Press the MENU/TV button on the remote control, The MAIN MENU appears.
   "MODE" is selected, then press the OK button.



2. MODE SETTING menu will appear.
   "SYSTEM" is selected, then press the OK button.



3. RECORDING AND PLAYBACK SYSTEM SETTING menu will appear.
   "AV" : "AV1" and "AUDIO" : "MONO" are selected, press the OK button.



- Self- recording means "Record the AUDIO signal and play back the just-recorded portion.

2-3-3. BIAS LEVEL ADJ.

[A]

Measuring Point	Measuring Equipment	ADJ. Condition
TP201 (HOT) TP202 (GND)	Oscilloscope AC voltmeter Frequency counter	REC (SP) mode Blank tape

ADJ. Location	ADJ. Value
VR201 (BIAS)	24 mVrms

1. Load the VCR with a blank tape and select the SP record mode without all incoming signal.
2. After confirming on the oscilloscope that a 70 kHz sine wave is being output, adjust VR201 (BIAS) so that the AC voltmeter's reading is **24 mVrms**.

[B]

Measuring Point	Measuring Equipment	ADJ. Condition
AUDIO OUTPUT terminal (EURO-AV pin 3: Lch)	Oscilloscope AC voltmeter Standard audio signal generator (SG: signal –33.8 dBs, 1 kHz –33.8 dBs, 10 kHz)	Self-recording (SP mode Blank tape)

ADJ. Location	ADJ. Value
VR201 (BIAS)	–4 dB ~ +4 dB between 400 kHz and 10 kHz

1. Connect the standard audio signal generator to the AUDIO INPUT terminal (EURO-AV1 pin6: Lch).
2. Set the standard audio signal generator's output level to –33.8 dBs.
3. Set the standard audio signal generator's frequency to 400 Hz and then 10 kHz. Record each of these frequency signals.
4. Play back each of the just-recorded portion.
5. Confirm that the 10 kHz level on AC voltmeter's reading is **from –4 dB to +4 dB**, compared with 400 Hz level.
6. If the 10 kHz level is less than –4 dB below 400 Hz level or more than +4 dB above 400 Hz level, Rotate VR201 (BIAS) slightly to adjust it.
7. Repeat steps 3 through 6 if necessary.

AUDIO FM (Hi-Fi) CIRCUIT

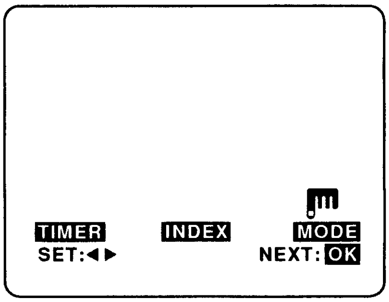
NOTES:

- Before making these adjustments, check that the surface of the parts touching the tape such as the A-FM head or guides are clean.
- Set the following switch or On-screen menu to the positions indicated below, before making following adjustments.

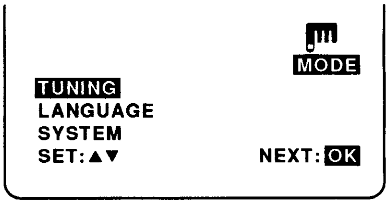
SWITCH or ON-SCREEN MENU	POSITION
TAPE SPEED	SP
O/AV	AV
AV	AV1
AUDIO	ST

To select AV and AUDIO mode

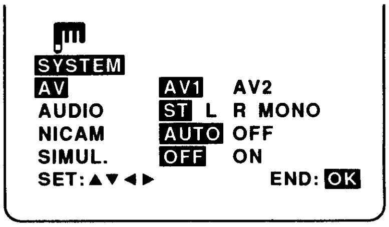
1. Press the MENU/TV button on the remote control, The MAIN MENU appears.
   "MODE" is selected, then press the OK button.



2. MODE SETTING menu will appear.
   "SYSTEM" is selected, then press the OK button.



3. RECORDING AND PLAYBACK SYSTEM SETTING menu will appear.
   "AV" : "AV1", "AUDIO" : "ST" are selected, press the OK button.


SYSTEM
AV AV1 AV2
AUDIO ST L R MONO
NICAM AUTO OFF
SIMUL. OFF ON
SET:▲▼◀ ▶ END: OK

2-3-6. A-FM CARRIER FREQUENCY ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
TP233 (1.4 MHz) TP234 (1.8 MHz)	Frequency counter	REC (SP)mode Blank tape

ADJ. Location	ADJ. Value
VR233 (L-FO)	1.4 MHz +4/–6 kHz
VR234 (R-FO)	1.8 MHz +4/–6 kHz

1. Connect a frequency counter to TP233 (Lch), TP234 (Rch) and ground.
2. Adjust VR233 (L-FO) so that in the zero level signal status the frequency at TP233 becomes **1.4 MHz +4/-6 kHz**.
3. Adjust VR234 (R-FO) so that in the zero level signal status the frequency at TP234 becomes **1.8 MHz +4/-6 kHz**.

2-4. TUNER AND IF CIRCUITS ADJUSTMENT

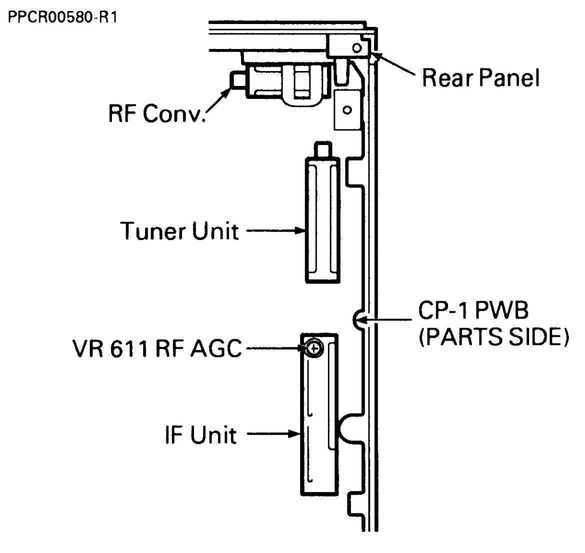
- When any malfunction occurs in the TUNER circuit the whole unit must be replaced.
- An adjustment of the IF circuit is shown as follows.

NOTE: The TUNER unit does not need any adjustments, because precise adjustments have been done before shipment.

2-4-1. TEST EQUIPMENT AND STANDARDS REQUIRED

Monitor TV	

2-4-2. LOCATION OF ADJUSTMENT POINT


PPCR00580-R1
Rear Panel
RF Conv.
Tuner Unit
CP-1 PWB
(PARTS SIDE)
VR 611 RF AGC
IF Unit

IF UNIT

Fig. 2.4.1

2-4-3. RF AGC ADJ.

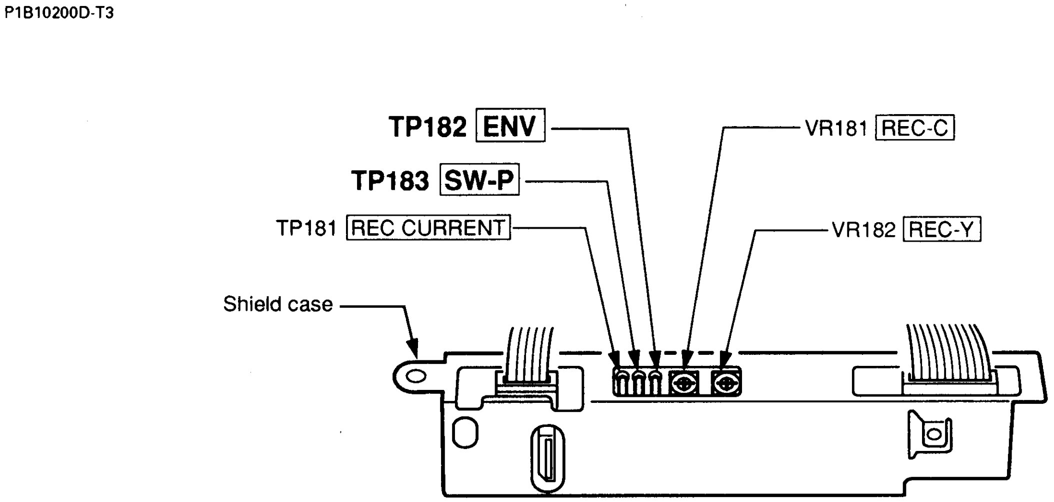
Measuring Point	Measuring Equipment	ADJ. Condition
Picture of monitor TV	Monitor TV	E-E mode

ADJ. Location	ADJ. Value
VR611 (RF AGC) (on the IF circuit)	S/N is best point

1. Connect the monitor TV to UHF ANTENNA OUTPUT terminal.
2. Connect the antenna to UHF ANTENNA INPUT terminal.
3. Receive the middle electrical field (70 dBμ ~ 90 dBμ) of the UHF channel, and slowly turn VR611 (RF AGC) from the point where snow-noise is present to the point where it just disappears from the monitor TV.
4. Confirm by monitor TV that there is no beat and saturation (S/N is best point) when receiving any TV channel.

3. TEST POINT FOR TAPE PATH ADJUSTMENT

Test point TP182 (ENV) and TP183 (SW-P) for tape path adjustment is shown in Figure below.
For adjustment, refer to the Mechanism Service Information (TP30036).


P1B10200D-T3
TP182 ENV
TP183 SW-P
TP181 REC CURRENT
Shield case
VR181 REC-C
VR182 REC-Y

VP-1 PWB ASS'Y

Fig. 3.1

4. PARTS LIST

ACCESSORIES

LOCATION	PARTS NO.	DESCRIPTION
	645 002 8779	REMOCON(WITH COVER BATTERY)
	613 145 3227	COVER BATTERY(FOR REMOCON)
	613 149 4008	INSTRUCTION MANUAL
	613 132 6132	CABLE,ANT
OR	613 132 5975	CORD,ANT
⚠	613 136 6411	CORD,POWER
OR ⚠	613 140 7473	CORD,POWER

****

PACKING MATERIALS

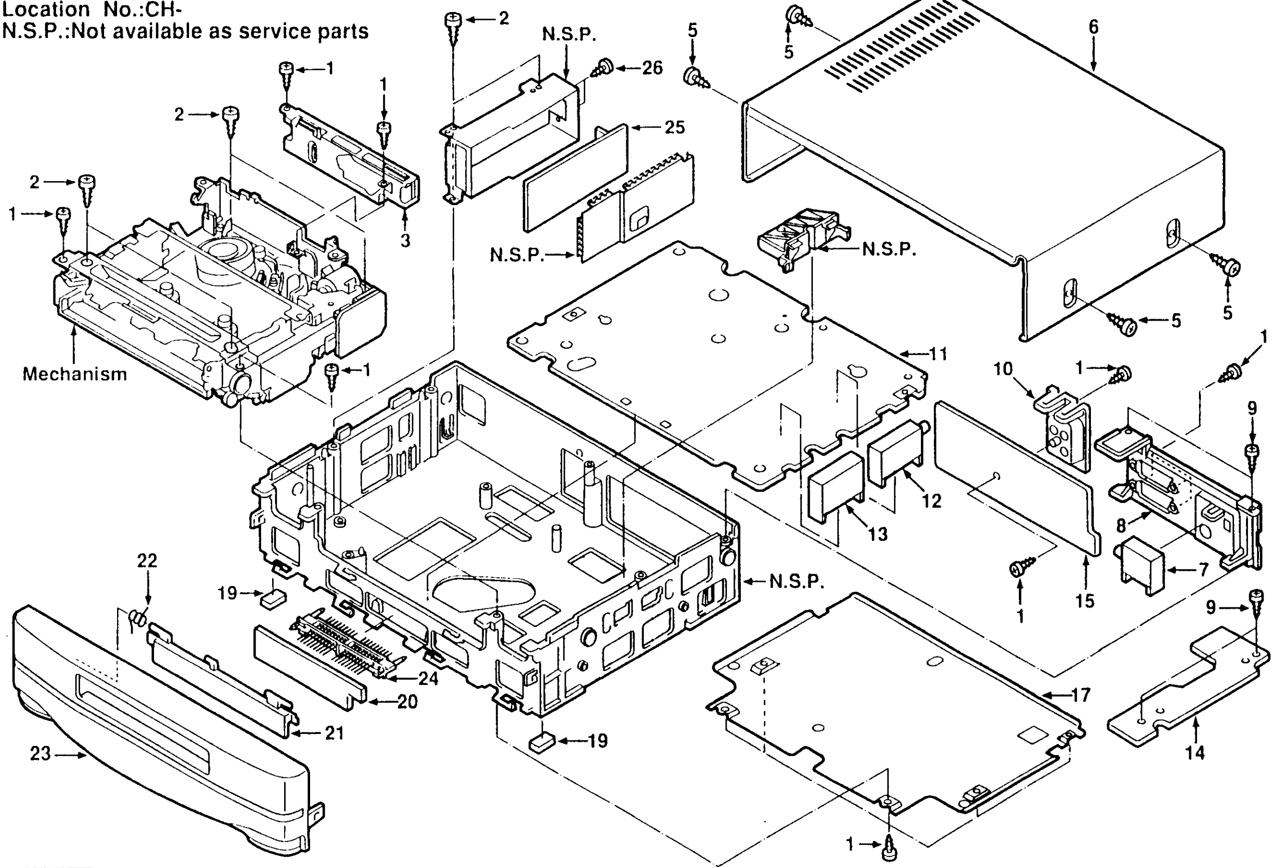
LOCATION	PARTS NO.	DESCRIPTION
	613 149 7573	CARTON CASE
	613 150 2291	CUSHION,FRONT
	613 150 2307	CUSHION,BACK
	613 099 1768	POLYE COVER,INNER-K

****

CABINET & CHASSIS PARTS

LOCATION	PARTS NO.	DESCRIPTION
CH-1	411 137 0007	SCR L-TPG BIN 3X10
CH-2	411 021 7907	SCR S-TPG BIN 4X12
CH-3	613 145 6594	COMPL PWB,VP-1
CH-5	412 028 9406	SPECIAL SCREW
CH-6	613 149 6583	COMPL,COVER TOP
CH-7	613 143 8620	MODULATOR,RF
OR	613 143 8637	MODULATOR,RF
CH-8	613 145 7850	TERMINAL
CH-9	411 021 3800	SCR S-TPG BIN 3X10
CH-10	613 145 7867	TERMINAL(RCA)
CH-11	613 149 4701	COMPL PWB,CP-1-A
CH-12	645 000 1772	TUNER,U
CH-13	645 000 1789	TUNER,IF
CH-14	613 146 8832	COMPL PWB,TN-5
CH-15	613 145 6600	COMPL PWB,TB-1
CH-17	613 139 2182	COVER BOTTOM
CH-19	613 121 1001	STAND,FELT,FRONT
CH-20	613 144 4461	COMPL PWB,TM-1
CH-21	613 150 9177	DOOR CASSETTE
CH-22	613 140 7459	SPRING
CH-23	613 149 2011	ASSY,CABINET FRONT
CH-24	613 141 1395	PLUG,26P
CH-25	613 145 6877	COMPL PWB,PW-1
CH-26	411 021 6405	SCR S-TPG BIN 3X8

Undesignated numeral shows
Location No.:CH-
N.S.P.:Not available as service parts

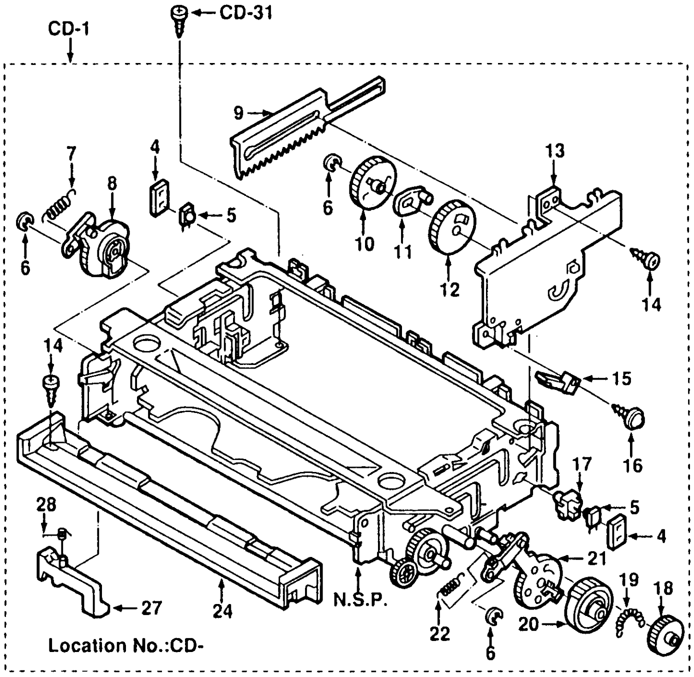


TP4H/E-TH

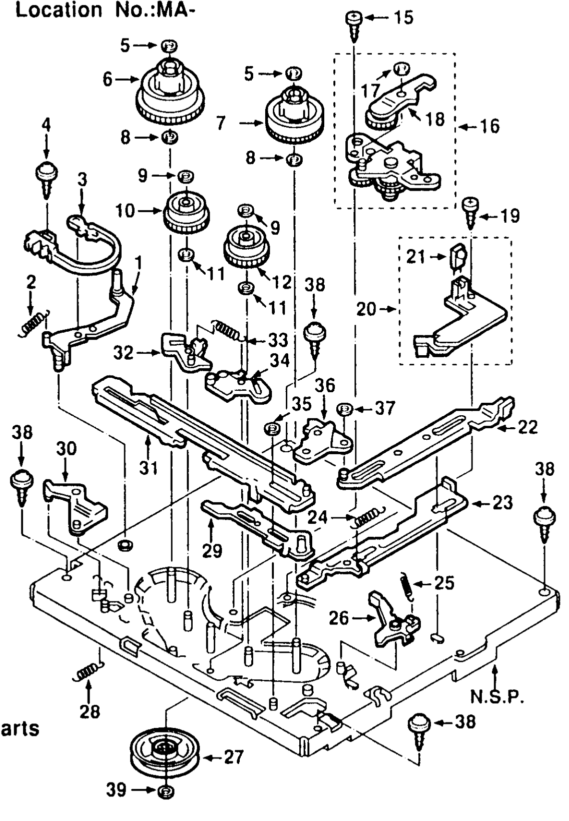
MECHANISM PARTS

MECHANISM PARTS 1

LOCATION	PARTS NO.	DESCRIPTION
CD-1	613 142 9581	COMPL,CASSETTE MECHANISM
CD-4	613 022 0585	LID
CD-5	407 098 3201	PHOTO COUPLE PN150SAN
CD-6	411 015 9801	RING E 2.3
CD-7	613 022 1643	SPRING,LINK L
CD-8	613 022 0073	ASSY,GEAR,LEVER L
CD-9	613 022 2695	RACK
CD-10	613 141 6109	GEAR,LOCK
CD-11	613 021 9916	ASSY,LEVER,PINION
CD-12	613 022 2626	GEAR,PINION
CD-13	613 021 9657	ASSY,BRACKET,GEAR
CD-14	411 027 1305	SCR S-TPG BIN 2.6X4
CD-15	613 095 0949	SW,SPECIAL
CD-16	411 106 9208	SCR PAN+SW+W 2X9
CD-17	613 022 0943	HOLDER,TRANSISTOR
CD-18	613 022 2619	GEAR,IDLER
CD-19	613 022 1667	SPRING,GEAR MAIN
CD-20	613 022 2596	GEAR,MAIN
CD-21	613 022 0097	ASSY,GEAR,LEVER R
CD-22	613 022 1674	SPRING,LINK R
CD-24	613 022 4064	BOARD,UNDER
CD-27	613 124 5006	LEVER,SAFETY SW
CD-28	613 125 6149	SPRING,SAFETY SW
CD-31	411 001 8702	SCR BIN 3X6
MA-1	613 100 0391	ASSY,LEVER,TENSION
MA-2	613 085 7996	SPRING,LEVER TENSION
MA-3	613 021 9701	ASSY,HOLDER,BAND
MA-4	411 144 2803	SCR PAN+SW+W 2.6X6
MA-5	411 109 1605	WASHER Y 2.6X6X0.25
MA-6	613 135 7068	ASSY,REEL,SUPPLY
OR	613 135 7549	ASSY,REEL,SUPPLY
MA-7	613 135 7075	ASSY,REEL,TAKE UP
OR	613 143 2963	ASSY,REEL,TAKE UP
MA-8	412 021 5306	SPECIAL WASHER 3.1X6X0.3
OR	412 015 8900	SPECIAL WASHER 3.1X6X0.4
OR	412 015 8504	SPECIAL WASHER 3.1X6X0.5
MA-9	411 109 1506	WASHER Y 2.1X6X0.25
OR	411 109 1407	WASHER Y 2.1X5X0.25
MA-10	613 135 7150	GEAR,REEL SUPPLY
OR	613 142 9116	GEAR,REEL SUPPLY
MA-11	412 026 7305	SPECIAL WASHER 2.6X6X0.25
MA-12	613 135 7167	GEAR,REEL TAKE UP
OR	613 142 9109	GEAR,REEL TAKE UP
MA-15	412 042 4302	SPECIAL SCREW 2.6X4
MA-16	613 135 7099	COMPL,IDLER,CLUTCH
MA-17	411 120 1301	WASHER Y 2.1X4X0.25
MA-18	613 135 7082	ASSY,IDLER
MA-19	411 021 3107	SCR S-TPG BIN 2.6X8
MA-20	613 120 9053	COMPL PCB,MC-4
MA-21	407 016 7205	LED LN59
MA-22	613 021 9985	ASSY,SLIDE,ACT PLATE
MA-23	613 142 9086	SLIDE,C BRAKE
MA-24	613 022 1612	SPRING,RETURN SLIDE
MA-25	613 022 1506	SPRING,SUB T
MA-26	613 098 0106	ASSY,BRAKE SUB T
MA-27	613 077 3647	PULLEY,REEL
MA-28	613 022 1490	SPRING,SUB SUPPLY
MA-29	613 022 2374	SLIDE,ACT BRAKE
MA-30	613 084 8871	BRAKE,SUB SUPPLY
MA-31	613 022 0004	ASSY,SLIDE,M PLATE
MA-32	613 080 9216	ASSY,BRAKE,SUPPLY
MA-33	613 086 2914	SPRING,MAIN BRAKE
MA-34	613 080 9209	ASSY,BRAKE,TAKE UP
MA-35	411 109 3005	WASHER Y 2.6X5X0.5
MA-36	613 022 2015	LEVER,CONT PLATE
MA-37	412 015 9501	SPECIAL WASHER
MA-38	411 021 7907	SCR S-TPG BIN 4X12
MA-39	412 045 4606	SPECIAL WASHER 2.4X6X0.25



Undesignated numeral shows
Location No.:MA-



N.S.P.:Not available as service parts

92EP1/MA-1

MECHANISM PARTS 2

LOCATION	PARTS NO.	DESCRIPTION
DR-1	613 097 5355	COMPL,CYLINDER,4H6P-R
DR-2	411 038 1608	SCR PAN+W 3X8
DR-3	613 097 5362	ASSY,CYLINDER,UPR 4H6P-R
DR-4	613 095 9881	ASSY,CYLINDER,LWR 6K
DR-5	613 097 2170	SPACER,MOTOR 0.3T
DR-6	613 088 9072	BASE,CYLINDER
DR-7	411 047 7509	SCR PAN+FLG 3X6
DR-8	411 047 5000	SCR PAN+FLG 2.6X8
DR-9	613 132 3520	STATOR,MOTOR CYL
OR	613 085 7279	STATOR,MOTOR CYL
DR-10	411 044 8301	SCR PAN+SW 2.3X10
OR	411 044 9209	SCR PAN+SW 2.3X8
DR-11	613 022 4019	ROTOR,MOTOR CYL
DR-12	411 044 9001	SCR PAN+SW 2.3X6
MB-1	613 123 4802	SLEEVE
MB-2	613 053 3227	SPECIAL WASHER
MB-3	613 123 4970	TAPE GUIDE
MB-4	411 004 5302	NUT HEX (3)
MB-5	613 123 9418	CAP
MB-6	613 021 9961	ASSY,SLIDE,ACT PINCH
MB-7	613 021 9800	ASSY,LEVER,CAM PINCH
MB-8	411 109 2008	WASHER Y 3.1X8X0.5
MB-9	613 022 1797	SPRING,ACE HEAD
MB-10	613 021 9640	COMPL,BRACKET,HEAD
MB-11	613 110 1692	SLEEVE,ACE HEAD
MB-12	412 015 8207	SPECIAL NUT (M5)
MB-13	411 120 0007	SCR PAN+SW+W 2.6X5
MB-14	613 120 3631	BRACKET,STOPPER
MB-15	613 022 1582	SPRING,SLIDE BRAKE
MB-16	613 094 9240	COMPL,SLIDE,CAM
MB-17	613 022 1575	SPRING,LINK LOCK
MB-18	613 022 2725	DAMPER
MB-19	613 022 2534	GEAR,FRONT LOAD
MB-20	613 094 1206	ASSY,LEVER,FRONT
MB-21	613 134 2910	GEAR,HELICAL FRONT
MB-22	411 046 8002	SCR PAN+SW+W 2.6X6
MB-23	411 023 2801	SCR S-TPG PAN 2.6X6
MB-24	411 023 3303	SCR S-TPG PAN 2.6X8
OR	411 021 3107	SCR S-TPG BIN 2.6X8
MB-28	613 077 3227	HOLDER,WORM
MB-29	613 027 0382	WASHER
MB-30	613 078 8320	ASSY,WORM,FRONT
MB-31	613 117 0599	BRACKET,HOLDER
MB-32	613 093 9159	PLATE,NUT
MB-33	613 093 8374	DAMPER,MOTOR
MB-34	613 077 3616	DAMPER,WORM
MB-35	613 121 9960	ASSY,LOADING MOTOR
MB-36	613 092 9945	DAMPER,MOTOR
MB-37	613 132 8075	COMPL PCB,MC-3
MB-38	613 144 0678	COMPL PWB,MC-2
MB-39	613 110 0374	ROTARY SWITCH
MB-40	411 126 5303	SCR PAN 2.6X13
MB-41	613 092 9921	ASSY,SLIDE,FRONT
MB-42	613 092 5985	SPRING,LEVER LOAD
MB-43	613 092 5992	SPRING,LEVER ACT
MB-44	613 092 5886	HOLDER,WORM
OR	613 138 8628	HOLDER,WORM
MB-45	613 027 0627	WASHER 2.1X6X0.5
MB-46	613 092 9938	ASSY,WORM,LOAD
MB-47	613 022 2985	BELT,LOADING
MB-48	412 033 4106	WASHER SLIT 2.6X5X0.50
MB-49	613 077 3579	GEAR,HELICAL
MB-50	613 102 9293	ASSY,LEVER,REV GUIDE
MB-51	613 022 1568	SPRING,REVIEW LEVER
MB-52	613 022 0158	COMPL,PINCH ROLLER
MB-53	613 147 9951	SPRING,PINCH ROLLER
MB-54	411 109 2107	WASHER Y 3.6X6X0.5
MB-55	613 078 8160	COMPL,LEVER,ACT BRAKE

Note:
As shown in the figure, the parts supporting the "ASSY, GUIDE, ROLLER" of Location No. MB-61 comes in two types-group A and group B. (Location MB-60 and 61 are the same.) No one part of group A can be replaced by that of group B by itself, but group A and group B can be replaced as a whole as they are interchangeable.

LOCATION	PARTS NO.	DESCRIPTION
MB-57	613 135 7655	PLATE,BGR
MB-58	613 145 5009	ASSY,MOUNTING,ROLLER S
MB-59	613 145 5016	ASSY,MOUNTING,ROLLER T
MB-60	411 063 0904	SCR SET HEX-SCT 2X3
MB-61	613 022 0233	ASSY,GUIDE,ROLLER
MB-63	645 000 2533	HEAD,FULL ERASE
MB-66	613 136 0532	LEVER,FE HEAD
MB-67	613 022 1698	SPRING,ERASE HEAD
MB-70	613 022 1919	PLATE,GUIDE
MB-71	411 031 1209	SCR BIN 2.6X5
MB-72	613 021 9725	ASSY,BASE,ROLLER S
MB-73	613 021 9732	ASSY,BASE,ROLLER T
MB-80	411 109 1803	WASHER Y 2.6X6X0.5
MB-81	613 119 8562	ASSY,ROLLER,CLEANER
MB-82	613 143 1881	ASSY,LEVER,CLEANER
MB-83	613 119 8593	SPRING
MB-84	613 142 9055	BRACKET,CLEANER
MB-90	613 140 4069	FLEXIBLE FLAT CABLE,CN811-CN303

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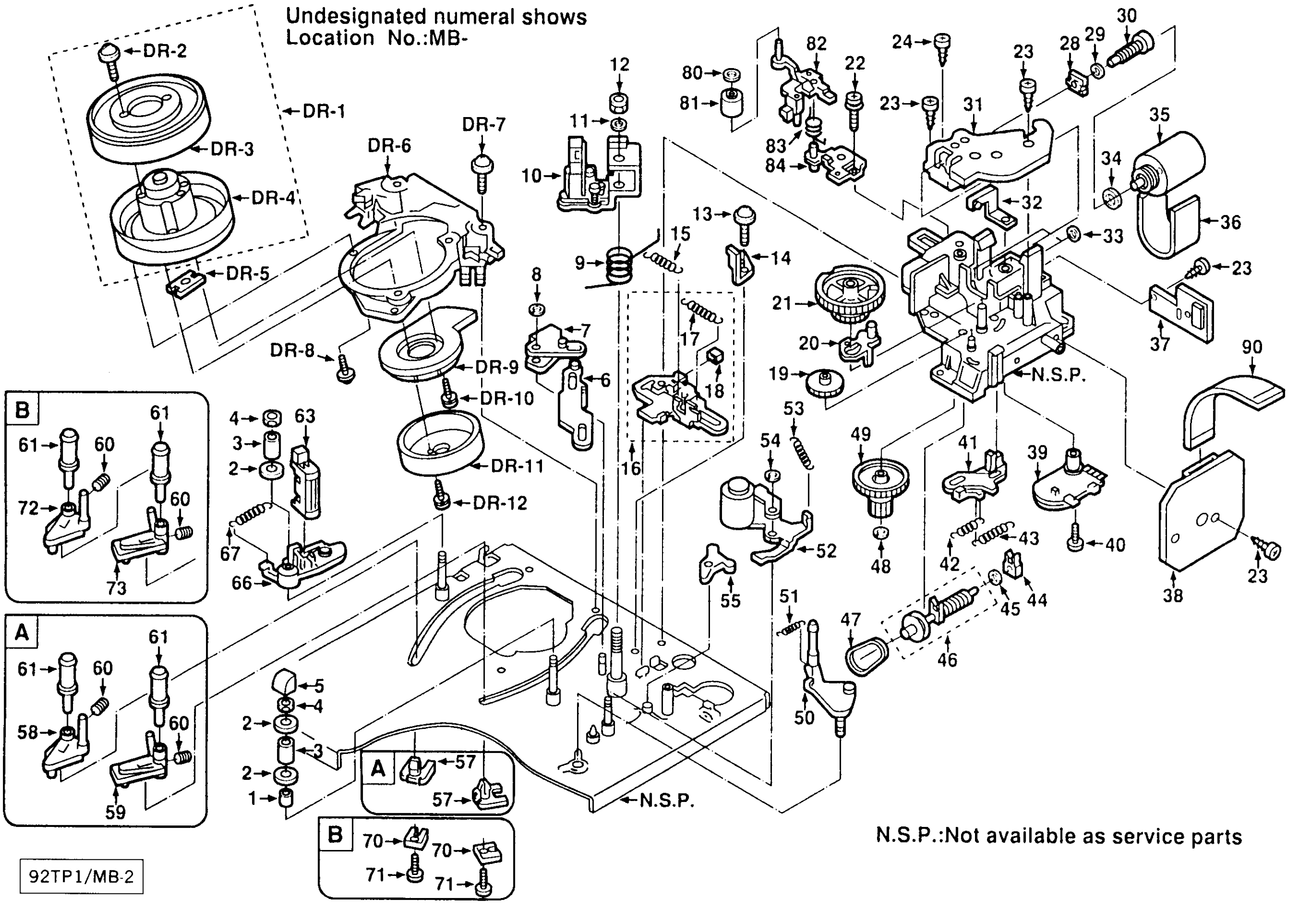
MECHANISM PARTS 3

LOCATION	PARTS NO.	DESCRIPTION
MC-1	645 000 5053	MOTOR,CAPSTAN DC 3W
MC-2	613 022 2978	BELT,REEL DRIVE
MC-3	613 135 4609	COMPL,LEVER,CLUTCH
MC-6	613 022 1520	SPRING,LEVER CLUTCH
MC-7	613 082 3434	LEVER,CHANGE CLUTCH
MC-8	613 022 1711	SPRING,CHANGE CLUTCH
MC-9	613 081 7518	ASSY,BRAKE CAPSTAN
MC-10	613 098 2285	SPRING,CAPSTAN
MC-12	411 021 3107	SCR S-TPG BIN 2.6X8
MC-13	411 109 2008	WASHER Y 3.1X8X0.5
MC-14	613 142 9093	SLIDE,CAM PLATE
MC-15	613 022 2701	CAM,MODE
MC-16	411 109 1902	WASHER Y 3.1X6X0.5
MC-17	613 135 7686	CAM,MAIN
MC-18	613 135 7532	ASSY,RACK,LOAD
MC-19	411 109 1803	WASHER Y 2.6X6X0.5
MC-20	613 135 7648	SPACER,RACK LOAD
MC-22	411 047 6809	SCR PAN+FLG 3X4
MC-23	613 021 9763	ASSY,EARTH,CYL
MC-24	613 135 7662	GEAR,LOAD TAKE UP
MC-25	613 022 1551	SPRING,GEAR LOAD T
MC-26	613 021 9879	ASSY,LEVER,LOAD T
MC-27	613 090 6373	GEAR,LOAD S
MC-28	613 022 1704	SPRING,GEAR LOAD S
MC-29	613 021 9862	ASSY,LEVER,LOAD S
MC-30	613 022 2039	LEVER,RETURN TENSION
MC-31	613 091 3104	ASSY,LEVER CONTROL
MC-34	411 028 6309	SCR S-TPG PAN 2.6X6
MC-35	412 015 8603	SPECIAL WASHER 3.1X6X0.25
MC-36	613 130 9890	ASSY,GEAR,FRICTION
MC-37	412 045 4606	SPECIAL WASHER 2.4X6X0.25
MC-38	411 092 0906	WASHER Z 2.6X10X0.5
MC-40	411 100 0300	SCR S-TPG BIN 2.6X5
MC-41	613 120 9060	COMPL,MC-1

MECHANISM PARTS 2

Undesignated numeral shows
Location No.:MB-


DR-1
DR-2
DR-3
DR-4
DR-5
DR-6
DR-7
DR-8
DR-9
DR-10
DR-11
DR-12
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2
3
4
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N.S.P.
B
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A
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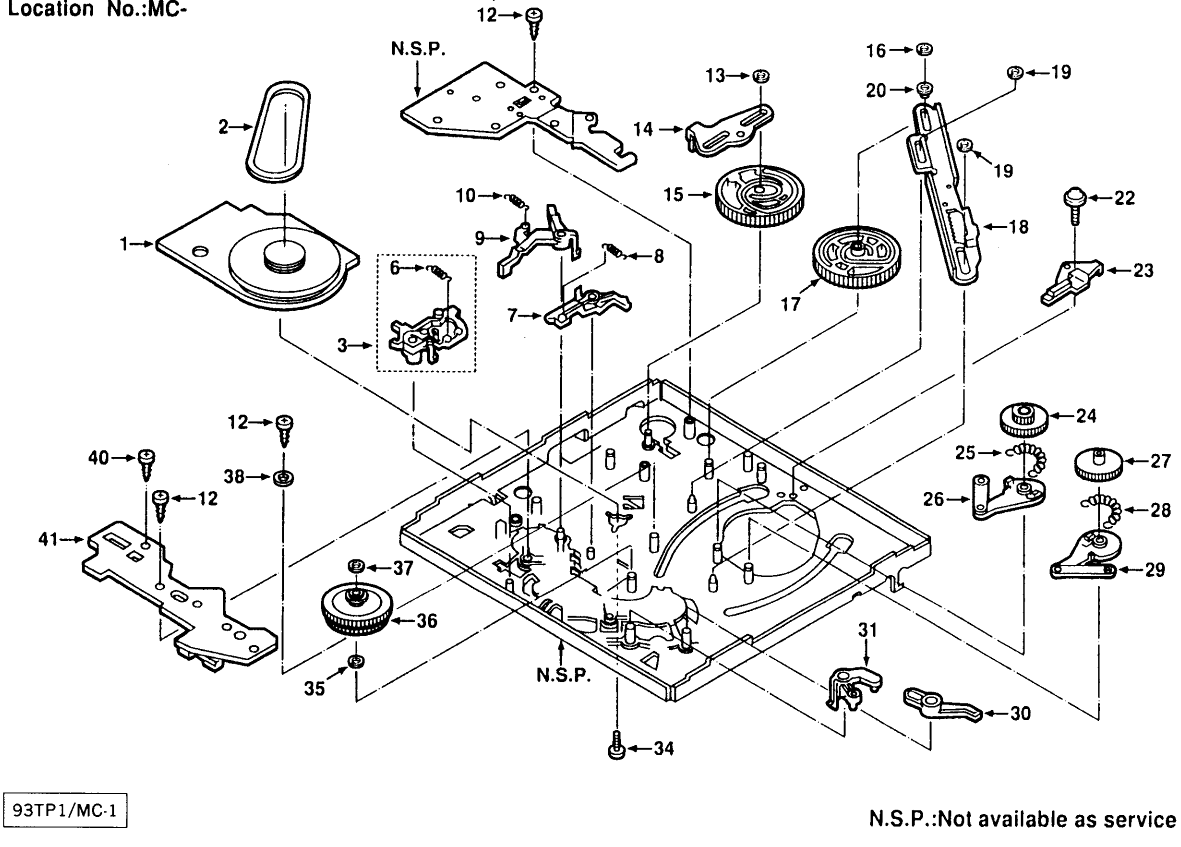
70
71
92TP1/MB-2

N.S.P.:Not available as service parts

MECHANISM PARTS 3

Undesignated numeral shows
Location No.:MC-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N.S.P.:Not available as service parts

ELECTRICAL PARTS

NOTE;

1. Materials of Capacitors and Resistors are abbreviated as follows;

Resistors	
MT-FILM	Metallized Film Resistor
MT-GLAZE	Metallized Glaze Resistor
OXIDE-MT	Oxide Metallized Film Resistor
Capacitors	
MT-POLYEST	Metallized Polyester Capacitor
MT-COMPO	Metallized Composite Capacitor
TA-SOLID	Tantalum Solid Capacitor
AL-SOLID	Aluminum Solid Capacitor
NP-ELECT	Non-Polarized Electrolytic Capacitor
OS-SOLID	Aluminum Solid Capacitors with Organic Semiconductive Electrolytic Capacitor
DL-ELECT	Double Layered Electrolytic Capacitor

2. Tolerance of Capacitor(10pF over) and Resistor are noted with follow symboles.
   F ············ ±1% G ············ ±2% J ············ ±5% K ············ ±10%
   M ············ ±20% N ············ ±30% Z ············ +80% ~ −20%
3. Capacitors
   U : uF P : pF
4. Inductors
   UH : uH MH : mH
5. N.S.P. : Not available as service parts.

LOCATION	PARTS NO.	DESCRIPTION
COMPL PWB,CP-1-A		
COMPL.NO	613 149 4701	
(SEMICONDUCTORS)		
Q1002	405 057 6201	TR 2SC4038-Q-TL2
OR	405 057 6409	TR 2SC4038-R-TL2
OR	405 123 7002	TR 2SD1991A-Q-(TA)
OR	405 123 7101	TR 2SD1991A-R-(TA)
Q1003	405 064 0100	TR 2SA1561-TL2-Q
OR	405 064 0209	TR 2SA1561-TL2-R
OR	405 123 6708	TR 2SB1320A-Q-(TA)
OR	405 123 6807	TR 2SB1320A-R-(TA)
Q1004	405 064 0100	TR 2SA1561-TL2-Q
OR	405 064 0209	TR 2SA1561-TL2-R
OR	405 123 6708	TR 2SB1320A-Q-(TA)
OR	405 123 6807	TR 2SB1320A-R-(TA)
Q1006	405 057 6201	TR 2SC4038-Q-TL2
OR	405 057 6409	TR 2SC4038-R-TL2
OR	405 123 7002	TR 2SD1991A-Q-(TA)
OR	405 123 7101	TR 2SD1991A-R-(TA)
Q1007	405 057 6201	TR 2SC4038-Q-TL2
OR	405 057 6409	TR 2SC4038-R-TL2
OR	405 123 7002	TR 2SD1991A-Q-(TA)
OR	405 123 7101	TR 2SD1991A-R-(TA)
Q1011	405 063 9708	TR DTC144EL-TL2
OR	405 123 6500	TR UN6213-(TA)
Q1012	405 057 6201	TR 2SC4038-Q-TL2
OR	405 057 6409	TR 2SC4038-R-TL2
OR	405 123 7002	TR 2SD1991A-Q-(TA)
OR	405 123 7101	TR 2SD1991A-R-(TA)
Q1014	405 057 6201	TR 2SC4038-Q-TL2
OR	405 057 6409	TR 2SC4038-R-TL2
OR	405 123 7002	TR 2SD1991A-Q-(TA)
OR	405 123 7101	TR 2SD1991A-R-(TA)
Q1101	405 064 0100	TR 2SA1561-TL2-Q
OR	405 064 0209	TR 2SA1561-TL2-R
OR	405 123 6708	TR 2SB1320A-Q-(TA)
OR	405 123 6807	TR 2SB1320A-R-(TA)
Q1102	405 057 6201	TR 2SC4038-Q-TL2
OR	405 057 6409	TR 2SC4038-R-TL2
OR	405 123 7002	TR 2SD1991A-Q-(TA)
OR	405 123 7101	TR 2SD1991A-R-(TA)
Q1151	405 063 9906	TR DTC124EL-TL2
OR	405 123 6401	TR UN6212-(TA)
Q1152	405 064 0100	TR 2SA1561-TL2-Q
Q1152	405 064 0209	TR 2SA1561-TL2-R
OR	405 123 6708	TR 2SB1320A-Q-(TA)
OR	405 123 6807	TR 2SB1320A-R-(TA)
Q1301	405 063 9104	TR DTA144EL-TL2
OR	405 123 6609	TR UN6113-(TA)
Q1312	405 057 6201	TR 2SC4038-Q-TL2
OR	405 057 6409	TR 2SC4038-R-TL2
OR	405 123 7002	TR 2SD1991A-Q-(TA)
OR	405 123 7101	TR 2SD1991A-R-(TA)
Q1313	405 018 2501	TR 2SC3399-AC
OR	405 000 6104	TR DTC144ES-DCTP
Q1601	405 064 0100	TR 2SA1561-TL2-Q
OR	405 064 0209	TR 2SA1561-TL2-R
OR	405 123 6708	TR 2SB1320A-Q-(TA)
OR	405 123 6807	TR 2SB1320A-R-(TA)
Q1621	405 057 6201	TR 2SC4038-Q-TL2
OR	405 057 6409	TR 2SC4038-R-TL2
OR	405 123 7002	TR 2SD1991A-Q-(TA)
OR	405 123 7101	TR 2SD1991A-R-(TA)
Q1622	405 057 6201	TR 2SC4038-Q-TL2
OR	405 057 6409	TR 2SC4038-R-TL2
OR	405 123 7002	TR 2SD1991A-Q-(TA)
OR	405 123 7101	TR 2SD1991A-R-(TA)
Q1623	405 064 0100	TR 2SA1561-TL2-Q
OR	405 064 0209	TR 2SA1561-TL2-R
OR	405 123 6708	TR 2SB1320A-Q-(TA)
OR	405 123 6807	TR 2SB1320A-R-(TA)
Q2001	405 018 0101	TR 2SC3331-T-AA
OR	405 018 0200	TR 2SC3331-U-AA
Q2002	405 000 1208	TR DTA124ES-DCTP
OR	405 003 7702	TR 2SA1346-AC
Q2003	405 018 2501	TR 2SC3399-AC
OR	405 063 9708	TR DTC144EL-TL2
Q2004	405 018 2501	TR 2SC3399-AC
OR	405 063 9708	TR DTC144EL-TL2
OR	405 000 6104	TR DTC144ES-DCTP
Q2008	405 018 2501	TR 2SC3399-AC
OR	405 063 9708	TR DTC144EL-TL2
OR	405 000 6104	TR DTC144ES-DCTP
Q2009	405 018 2501	TR 2SC3399-AC
OR	405 063 9708	TR DTC144EL-TL2
OR	405 000 6104	TR DTC144ES-DCTP
Q2306	405 013 6801	TR 2SC2274-E-AA
OR	405 013 7006	TR 2SC2274-F-AA

LOCATION	PARTS NO.	DESCRIPTION
Q2308	405 018 2501	TR 2SC3399-AC
OR	405 063 9708	TR DTC144EL-TL2
OR	405 000 6104	TR DTC144ES-DCTP
Q2309	405 018 2501	TR 2SC3399-AC
OR	405 063 9708	TR DTC144EL-TL2
OR	405 000 6104	TR DTC144ES-DCTP
Q2314	405 003 7603	TR 2SA1345-AC
OR	405 063 9104	TR DTA144EL-TL2
OR	405 000 2205	TR DTA144ES-DCTP
Q2315	405 018 2501	TR 2SC3399-AC
OR	405 063 9708	TR DTC144EL-TL2
OR	405 000 6104	TR DTC144ES-DCTP
Q2401	405 003 7900	TR 2SA1348-AC
OR	405 000 0508	TR DTA114ES-DCTP
Q2402	405 000 3103	TR DTC114ES-DCTP
OR	405 018 2808	TR 2SC3402-AC
Q2403	405 089 2103	TR 2SC4483-S-AN
OR	405 107 4102	TR 2SD1994-R (TA)
OR	405 107 4201	TR 2SD1994-S (TA)
Q2404	405 013 6801	TR 2SC2274-E-AA
OR	405 013 7006	TR 2SC2274-F-AA
Q3001	405 063 9708	TR DTC144EL-TL2
OR	405 123 6500	TR UN6213-(TA)
Q3002	405 063 9708	TR DTC144EL-TL2
OR	405 123 6500	TR UN6213-(TA)
Q3503	405 063 9708	TR DTC144EL-TL2
OR	405 123 6500	TR UN6213-(TA)
Q3504	405 063 9708	TR DTC144EL-TL2
OR	405 123 6500	TR UN6213-(TA)
Q3551	405 057 6201	TR 2SC4038-Q-TL2
OR	405 057 6409	TR 2SC4038-R-TL2
OR	405 123 7002	TR 2SD1991A-Q-(TA)
OR	405 123 7101	TR 2SD1991A-R-(TA)
Q3552	405 057 6201	TR 2SC4038-Q-TL2
OR	405 057 6409	TR 2SC4038-R-TL2
OR	405 123 7002	TR 2SD1991A-Q-(TA)
OR	405 123 7101	TR 2SD1991A-R-(TA)
Q3553	405 057 6201	TR 2SC4038-Q-TL2
OR	405 057 6409	TR 2SC4038-R-TL2
OR	405 123 7002	TR 2SD1991A-Q-(TA)
OR	405 123 7101	TR 2SD1991A-R-(TA)
Q6001	405 026 9004	TR 2SK222-D-AA
OR	405 026 9103	TR 2SK222-E-AA
OR	405 114 7806	TR 2SK1104-(TA) P
OR	405 114 7905	TR 2SK1104-(TA) Q
OR	405 114 8001	TR 2SK1104-(TA) R
OR	405 073 6407	TR 2SK772-E-AC
OR	405 073 6506	TR 2SK772-F-AC
Q6004	405 018 2501	TR 2SC3399-AC
OR	405 000 6104	TR DTC144ES-DCTP
Q6006	405 019 2005	TR 2SC536-E-SPA-AC
OR	405 019 2807	TR 2SC536-F-SPA-AC
OR	405 093 0607	TR KSC2785-Y
OR	405 011 8401	TR 2SC1740S-DCTP-Q
OR	405 011 8500	TR 2SC1740S-DCTP-R
Q6611	405 004 4007	TR 2SA608-E-SPA-AC
OR	405 004 4601	TR 2SA608-F-SPA-AC
OR	405 006 1707	TR 2SA933S-TP-Q
OR	405 006 1806	TR 2SA933S-T93-R
OR	405 093 0508	TR KSA1175-Y
Q6621	405 019 2005	TR 2SC536-E-SPA-AC
OR	405 019 2807	TR 2SC536-F-SPA-AC
OR	405 093 0607	TR KSC2785-Y
OR	405 011 8401	TR 2SC1740S-DCTP-Q
OR	405 011 8500	TR 2SC1740S-DCTP-R
Q6901	405 019 2005	TR 2SC536-E-SPA-AC

LOCATION	PARTS NO.	DESCRIPTION
Q6901	405 019 2807	TR 2SC536-F-SPA-AC
OR	405 093 0607	TR KSC2785-Y
OR	405 011 8401	TR 2SC1740S-DCTP-Q
OR	405 011 8500	TR 2SC1740S-DCTP-R
Q6902	405 004 4007	TR 2SA608-E-SPA-AC
OR	405 004 4601	TR 2SA608-F-SPA-AC
OR	405 006 1707	TR 2SA933S-TP-Q
OR	405 006 1806	TR 2SA933S-T93-R
OR	405 093 0508	TR KSA1175-Y
Q6903	405 019 2005	TR 2SC536-E-SPA-AC
OR	405 019 2807	TR 2SC536-F-SPA-AC
OR	405 093 0607	TR KSC2785-Y
OR	405 011 8401	TR 2SC1740S-DCTP-Q
OR	405 011 8500	TR 2SC1740S-DCTP-R
Q6904	405 018 2501	TR 2SC3399-AC
OR	405 000 6104	TR DTC144ES-DCTP
Q6921	405 084 8209	TR 2SC2960-F-SPA-AC
OR	405 084 8308	TR 2SC2960-G-SPA-AC

(INTEGRATED CIRCUITS)

LOCATION	PARTS NO.	DESCRIPTION
IC101	409 303 6700	IC LA7345M
IC111	409 297 6205	IC LC89925
IC162	410 166 2808	IC LC74760M-8783
IC201	409 189 3404	IC BA7755A
IC231	409 301 3602	IC AN3961NFBP-A
IC301	410 177 2903	IC LC866648V-5407
IC302	409 243 4101	IC MN1380-L
OR	409 313 0903	IC MN1381-L(TA)
IC303	409 114 4803	IC LB1641
IC351	409 306 0408	IC XRU2890BK
OR	409 306 0507	IC BU2890BK
OR	409 311 9601	IC BU2890DK
IC601	409 026 8203	IC L5631
OR	409 057 5103	IC UPC574J
IC602	409 247 7702	IC ST24C02AB1
OR	410 172 6807	IC X24C02P-C7189
OR	409 283 6202	IC LE24C02S1
IC691	409 019 6209	IC LA7910

(DIODES)

LOCATION	PARTS NO.	DESCRIPTION
D1003	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D1004	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D1007	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D1301	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D1601	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D1602	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D1621	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D1622	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D2001	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D2301	407 053 6803	ZENER DIODE MTZ5.6C-T-77
D2401	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D2402	407 063 8705	ZENER DIODE MTZJ5.1C-T-77
D2403	407 120 5807	DIODE AK04-V2
OR	407 160 9100	DIODE ERA83-004V5

LOCATION	PARTS NO.	DESCRIPTION
D2405	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D2406	407 063 8705	ZENER DIODE MTZJ5.1C-T-77
D3001	407 150 7703	DIODE RB441Q T-77
D3002	407 063 9504	ZENER DIODE MTZJ8.2B-T-77
OR	407 070 8101	ZENER DIODE GZS8.2Y-BT
D3003	407 099 5303	ZENER DIODE MTZJ5.6B-T-77
OR	407 051 6904	ZENER DIODE GZS5.6Y-BT
D3102	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3104	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3105	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3106	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3107	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3111	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3113	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3121	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3122	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3123	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3502	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3554	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D6901	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D6902	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D6903	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77

(CRYSTAL DEVICES)

LOCATION	PARTS NO.	DESCRIPTION
X1001	645 000 6012	OSC,CRYSTAL 4.433619MHZ
OR	645 000 6029	OSC,CRYSTAL 4.433619MHZ
OR	645 002 4436	OSC,CRYSTAL 4.433619MHZ
X1621	613 002 8709	CRYSTAL 17.734475MHZ
OR	613 127 1555	OSC,CRYSTAL 17.734475MHZ
X3001	613 132 8242	RESONATOR,CERAMIC13.92MHZ
X3002	613 109 0972	OSC,CRYSTAL 32KHZ

(VARIABLE RESISTORS)

LOCATION	PARTS NO.	DESCRIPTION
VR101	613 120 8438	VR,SEMI 22KB
OR	613 120 8582	VR,SEMI 22KB
VR102	613 120 8421	VR,SEMI 2.2KB
OR	613 120 8575	VR,SEMI 2.2KB
VR103	613 147 7216	VR,SEMI 6.8KB
OR	613 147 7223	VR,SEMI 6.8KB
VR104	613 079 2532	VR,SEMI 10KB
OR	613 120 8544	VR,SEMI 10KB
VR201	613 097 7915	VR,SEMI 100KB
OR	613 001 9097	SEMI VR 100KB
VR233	645 002 7703	VR,SEMI 10K S
VR234	645 002 7710	VR,SEMI 5K S
VR351	613 097 7953	VR,SEMI 220KB
OR	613 001 9110	SEMI VR 220KB

(TRIMMER)

LOCATION	PARTS NO.	DESCRIPTION
CT120	613 002 6378	TRIMMER

(INDUCTORS)

LOCATION	PARTS NO.	DESCRIPTION
L1001	613 014 1156	COIL,INDUCTOR 39UHJ
OR	613 014 4676	HF CHOKE 39UHJ
L1002	613 014 0739	COIL,INDUCTOR 1.0UHM
OR	613 014 4256	HF CHOKE 1.0UHK
L1004	613 014 0999	COIL,INDUCTOR 150UHK
OR	613 014 4515	HF CHOKE 150UHK
L1005	613 014 1019	COIL,INDUCTOR 220UHK
OR	613 014 4539	HF CHOKE 220UHK
L1007	613 014 0791	COIL,INDUCTOR 3.3UHK
OR	613 014 4317	HF CHOKE 3.3UHK
L1008	613 014 0876	COIL,INDUCTOR 15UHK
OR	613 014 4393	HF CHOKE 15UHK
L1009	613 014 0777	COIL,INDUCTOR 2.2UHM
OR	613 014 4294	HF CHOKE 2.2UHK
L1010	613 014 0906	COIL,INDUCTOR 27UHK
OR	613 014 4423	HF CHOKE 27UHK
L1012	613 014 1156	COIL,INDUCTOR 39UHJ
OR	613 014 4676	HF CHOKE 39UHJ
L1013	613 014 0913	COIL,INDUCTOR 33UHK
OR	613 014 4430	HF CHOKE 33UHK
L1081	613 014 0975	COIL,INDUCTOR 100UHK
OR	613 014 4492	HF CHOKE 100UHK
L1101	613 014 0968	COIL,INDUCTOR 82UHK
OR	613 014 4485	HF CHOKE 82UHK
L1622	613 014 0821	COIL,INDUCTOR 5.6UHK
OR	613 014 4348	HF CHOKE 5.6UHK
L2001	613 015 6297	COIL,INDUCTOR 560UHJ
L2002	613 015 5474	HF CHOKE 27MH
L2003	613 014 3532	HF CHOKE 10000UHJ
L2301	613 015 6365	COIL,INDUCTOR 2.2MHJ
OR	613 014 8414	HF CHOKE 2200UHJ
L3001	645 002 3675	LINE FILTER
L3002	645 002 3675	LINE FILTER
L6601	613 014 0876	COIL,INDUCTOR 15UHK
OR	613 014 4393	HF CHOKE 15UHK
L6602	613 014 0852	COIL,INDUCTOR 10UHK
OR	613 014 4379	HF CHOKE 10UHK
L6621	613 014 0944	COIL,INDUCTOR 56UHK
OR	613 014 4461	HF CHOKE 56UHK

(TRANSFORMERS)

LOCATION	PARTS NO.	DESCRIPTION
T2001	621 019 9596	70KHZ OSC TRANS
T6901	613 109 0958	TRANS,IF
OR	613 109 0965	TRANS,IF

(DELAY LINES)

LOCATION	PARTS NO.	DESCRIPTION
DL101	645 000 5992	DELAY LINE(COMB)
OR	645 000 6005	DELAY LINE(COMB)

(CAPACITORS)

LOCATION	PARTS NO.	DESCRIPTION		
C1002	403 070 7205	CERAMIC	150P J	50V
C1003	403 075 3103	CERAMIC	82P J	50V
C1004	403 022 7703	CERAMIC	33P J	50V
C1005	403 139 2608	ELECT	0.47U M	50V
C1006	403 025 7304	CERAMIC	4.7P K	50V
C1007	403 073 2702	CERAMIC	390P J	50V
C1008	403 017 9705	CERAMIC	22P J	50V
C1009	403 025 7304	CERAMIC	4.7P K	50V
C1010	403 075 3103	CERAMIC	82P J	50V
C1011	403 139 2707	ELECT	1U M	50V
C1012	403 139 1502	ELECT	10U M	16V

LOCATION	PARTS NO.	DESCRIPTION
C1013	403 139 2608	ELECT 0.47U M 50V
C1014	403 001 1906	CERAMIC 0.01U M 16V
C1015	403 228 6401	CERAMIC 0.033U Z 16V
C1016	403 120 9005	CERAMIC 0.022U J 16V
C1021	403 073 2702	CERAMIC 390P J 50V
C1022	403 217 5507	CERAMIC 0.1U J 16V
C1023	403 070 7205	CERAMIC 150P J 50V
C1028	403 121 9509	CERAMIC 0.1U Z 50V
C1030	403 139 2707	ELECT 1U M 50V
C1031	403 139 2707	ELECT 1U M 50V
C1032	403 120 9609	CERAMIC 0.047U J 16V
C1033	403 120 9005	CERAMIC 0.022U J 16V
C1034	403 075 2601	CERAMIC 75P J 50V
C1036	403 139 2707	ELECT 1U M 50V
C1037	403 139 2905	ELECT 2.2U M 50V
C1038	403 120 9005	CERAMIC 0.022U J 16V
C1039	403 120 9609	CERAMIC 0.047U J 16V
C1040	403 001 1906	CERAMIC 0.01U M 16V
C1041	403 139 1502	ELECT 10U M 16V
C1042	403 120 9609	CERAMIC 0.047U J 16V
C1044	403 139 1007	ELECT 47U M 6.3V
C1045	403 001 1906	CERAMIC 0.01U M 16V
C1046	403 139 1502	ELECT 10U M 16V
C1047	403 139 1502	ELECT 10U M 16V
C1048	403 001 1906	CERAMIC 0.01U M 16V
C1049	403 022 7703	CERAMIC 33P J 50V
C1050	403 001 1906	CERAMIC 0.01U M 16V
C1051	403 073 6205	CERAMIC 470P J 50V
C1052	403 115 0901	CERAMIC 560P J 50V
C1053	403 001 1906	CERAMIC 0.01U M 16V
C1054	403 139 1007	ELECT 47U M 6.3V
C1058	403 019 9703	CERAMIC 27P J 50V
C1060	403 022 7703	CERAMIC 33P J 50V
C1061	403 022 7703	CERAMIC 33P J 50V
C1062	403 071 1509	CERAMIC 180P J 50V
C1063	403 068 8801	CERAMIC 100P J 50V
C1064	403 001 1906	CERAMIC 0.01U M 16V
C1081	403 074 8703	CERAMIC 680P J 50V
C1101	403 139 1007	ELECT 47U M 6.3V
C1102	403 001 1906	CERAMIC 0.01U M 16V
C1104	403 030 6309	CERAMIC 68P J 50V
C1105	403 026 2209	CERAMIC 47P J 50V
C1106	403 025 7304	CERAMIC 4.7P K 50V
C1107	403 026 2209	CERAMIC 47P J 50V
C1109	403 001 1906	CERAMIC 0.01U M 16V
C1110	403 139 2707	ELECT 1U M 50V
C1311	403 120 9005	CERAMIC 0.022U J 16V
C1601	403 121 9509	CERAMIC 0.1U Z 50V
C1602	403 223 9308	ELECT 470U M 6.3V
C1621	403 012 6006	CERAMIC 15P J 50V
C1622	403 012 6006	CERAMIC 15P J 50V
C1623	403 163 7907	ELECT 47U M 6.3V
C1624	403 139 1403	ELECT 47U M 10V
C1625	403 139 2806	ELECT 10U M 50V
C1627	403 068 8801	CERAMIC 100P J 50V
C1628	403 139 2806	ELECT 10U M 50V
C1630	403 217 4401	CERAMIC 6800P J 16V
C1631	403 086 2805	NP-ELECT 1U M 50V
C1632	403 120 9005	CERAMIC 0.022U J 16V
C1633	403 019 0403	CERAM 24P J 50V
C1634	403 008 5105	CERAMIC 10P D 50V
C1635	403 121 9509	CERAMIC 0.1U Z 50V
C1636	403 001 1906	CERAMIC 0.01U M 16V
C1637	403 163 7907	ELECT 47U M 6.3V
C2001	403 193 8400	ELECT 0.22U M 50V
C2002	403 129 0409	CERAMIC 0.01U K 16V
C2003	403 193 3900	ELECT 33U M 6.3V
C2004	403 001 5102	CERAMIC 2200P M 16V

LOCATION	PARTS NO.	DESCRIPTION
C2005	403 193 6703	ELECT 1U M 50V
C2006	403 120 8206	CERAMIC 0.012U K 16V
C2007	403 189 2405	ELECT 10U M 16V
C2009	403 071 5408	CERAMIC 220P J 50V
C2010	403 001 6208	CERAMIC 2700P M 16V
C2019	403 163 8409	ELECT 47U M 16V
C2021	403 001 1906	CERAMIC 0.01U M 16V
C2022	403 001 1906	CERAMIC 0.01U M 16V
C2023	403 071 6207	CERAMIC 220P K 50V
C2024	403 082 4209	POLYPRO 6800P J 100V
C2025	403 213 1107	CERAMIC 8200P K 16V
C2027	403 138 2500	CERAMIC 0.022U K 16V
C2030	403 189 2405	ELECT 10U M 16V
C2301	403 189 2405	ELECT 10U M 16V
C2302	403 189 2405	ELECT 10U M 16V
C2303	403 189 2405	ELECT 10U M 16V
C2304	403 189 2405	ELECT 10U M 16V
C2305	403 189 2405	ELECT 10U M 16V
C2306	403 189 2405	ELECT 10U M 16V
C2307	403 189 2405	ELECT 10U M 16V
C2308	403 189 2405	ELECT 10U M 16V
C2310	403 167 6500	ELECT 33U M 6.3V
C2311	403 167 6500	ELECT 33U M 6.3V
C2312	403 167 6500	ELECT 33U M 6.3V
C2313	403 001 7908	CERAMIC 0.047U K 16V
C2314	403 001 7908	CERAMIC 0.047U K 16V
C2315	403 191 8808	ELECT 2.2U M 50V
C2316	403 191 8808	ELECT 2.2U M 50V
C2317	403 159 8109	ELECT 100U M 6.3V
C2318	403 159 8109	ELECT 100U M 6.3V
C2319	403 129 9709	CERAMIC 0.015U K 16V
C2320	403 129 9709	CERAMIC 0.015U K 16V
C2321	403 129 0300	CERAMIC 0.01U J 16V
C2322	403 129 0300	CERAMIC 0.01U J 16V
C2323	403 001 1609	CERAMIC 0.01U K 16V
C2324	403 001 1609	CERAMIC 0.01U K 16V
C2325	403 001 1906	CERAMIC 0.01U M 16V
C2326	403 001 1906	CERAMIC 0.01U M 16V
C2327	403 163 7907	ELECT 47U M 6.3V
C2328	403 163 7907	ELECT 47U M 6.3V
C2329	403 001 1906	CERAMIC 0.01U M 16V
C2330	403 001 1906	CERAMIC 0.01U M 16V
C2331	403 189 2405	ELECT 10U M 16V
C2332	403 189 2405	ELECT 10U M 16V
C2333	403 189 2405	ELECT 10U M 16V
C2334	403 163 8409	ELECT 47U M 16V
C2343	403 189 2405	ELECT 10U M 16V
C2344	403 184 9805	MT-POLYEST 0.22U J 50V
C2345	403 072 4202	CERAMIC 270P J 50V
C2346	403 217 4005	CERAMIC 2200P J 16V
C2350	403 001 1906	CERAMIC 0.01U M 16V
C2352	403 189 2405	ELECT 10U M 16V
C2353	403 193 7502	ELECT 22U M 6.3V
C2354	403 191 8709	ELECT 1U M 50V
C2361	403 163 7907	ELECT 47U M 6.3V
C2362	403 001 1906	CERAMIC 0.01U M 16V
C2371	403 001 1906	CERAMIC 0.01U M 16V
C2372	403 001 1906	CERAMIC 0.01U M 16V
C2401	403 001 1906	CERAMIC 0.01U M 16V
C2402	403 163 7907	ELECT 47U M 6.3V
C2403	403 001 1906	CERAMIC 0.01U M 16V
C3001	403 248 2803	ELECT 2.2U M 50V
C3002	403 001 1906	CERAMIC 0.01U M 16V
C3003	403 002 4708	CERAMIC 0.1U Z 25V
C3004	403 001 1906	CERAMIC 0.01U M 16V
C3005	403 001 1906	CERAMIC 0.01U M 16V
C3008	403 189 2405	ELECT 10U M 16V
C3009	403 001 1906	CERAMIC 0.01U M 16V

LOCATION	PARTS NO.	DESCRIPTION			
C3010	403 010 7708	CERAMIC	12P	J	50V
OR	403 009 1700	CERAMIC	10P	J	50V
C3011	403 017 0108	CERAMIC	20P	J	50V
C3012	403 001 1906	CERAMIC	0.01U	M	16V
C3013	403 001 1906	CERAMIC	0.01U	M	16V
C3014	403 223 9308	ELECT	470U	M	6.3V
C3015	403 009 1700	CERAMIC	10P	J	50V
OR	403 010 7708	CERAMIC	12P	J	50V
C3016	403 001 1906	CERAMIC	0.01U	M	16V
C3017	403 072 8200	CERAMIC	330P	K	50V
C3020	403 121 9509	CERAMIC	0.1U	Z	50V
C3021	403 121 9509	CERAMIC	0.1U	Z	50V
C3022	403 155 2804	DL-ELECT	0.047F	Z	5.5V
C3050	403 001 1906	CERAMIC	0.01U	M	16V
C3051	403 002 4708	CERAMIC	0.1U	Z	25V
C3055	403 121 9509	CERAMIC	0.1U	Z	50V
C3501	403 129 9709	CERAMIC	0.015U	K	16V
C3502	403 001 8806	CERAMIC	6800P	K	16V
C3503	403 129 9709	CERAMIC	0.015U	K	16V
C3505	403 162 1807	ELECT	22U	M	10V
C3506	403 001 8806	CERAMIC	6800P	K	16V
C3508	403 162 1807	ELECT	22U	M	10V
C3509	403 163 7907	ELECT	47U	M	6.3V
C3510	403 001 1906	CERAMIC	0.01U	M	16V
C3511	403 071 6207	CERAMIC	220P	K	50V
C3513	403 119 6701	CERAMIC	0.068U	K	16V
C3514	403 057 2902	POLYESTER	0.1U	K	50V
C3515	403 059 6007	POLYESTER	0.022U	K	50V
C3516	403 001 5003	CERAMIC	2200P	K	16V
C3517	403 001 3801	CERAMIC	1500P	K	16V
C3522	403 069 1207	CERAMIC	1000P	K	50V
C3523	403 191 8709	ELECT	1U	M	50V
C3524	403 001 1906	CERAMIC	0.01U	M	16V
C3525	403 193 8608	ELECT	0.47U	M	50V
C3526	403 138 2500	CERAMIC	0.022U	K	16V
C3530	403 163 7907	ELECT	47U	M	6.3V
C3536	403 193 7601	ELECT	220U	M	6.3V
C3551	403 175 0903	MT-POLYEST	0.12U	J	50V
C3552	403 028 3402	CERAMIC	56P	J	50V
C3553	403 191 8709	ELECT	1U	M	50V
C3554	403 070 7205	CERAMIC	150P	J	50V
C3555	403 001 1906	CERAMIC	0.01U	M	16V
C3556	403 069 1207	CERAMIC	1000P	K	50V
C3558	403 149 0700	ELECT	33U	M	16V
C3560	403 068 9402	CERAMIC	100P	K	50V
C3570	403 121 9509	CERAMIC	0.1U	Z	50V
C3571	403 121 9509	CERAMIC	0.1U	Z	50V
C3599	403 184 9201	MT-POLYEST	0.039U	J	50V
C6001	403 121 9509	CERAMIC	0.1U	Z	50V
C6004	403 168 6103	MT-POLYEST	0.1U	J	50V
C6006	403 139 1809	ELECT	47U	M	16V
C6007	403 222 1105	CERAMIC	0.047U	Z	16V
C6009	403 233 1101	ELECT	22U	M	50V
C6010	403 121 9509	CERAMIC	0.1U	Z	50V
C6011	403 248 2001	ELECT	4.7U	M	25V
C6012	403 248 2001	ELECT	4.7U	M	25V
C6013	403 073 7004	CERAMIC	470P	K	50V
C6022	403 184 9102	MT-POLYEST	0.033U	J	50V
C6031	403 073 2702	CERAMIC	390P	J	50V
C6032	403 001 1906	CERAMIC	0.01U	M	16V
C6097	403 001 1906	CERAMIC	0.01U	M	16V
C6098	403 258 2602	ELECT	100U	M	6.3V
C6099	403 001 1906	CERAMIC	0.01U	M	16V
C6601	403 248 1905	ELECT	10U	M	16V
C6602	403 139 2806	ELECT	10U	M	50V
C6611	403 258 2909	ELECT	22U	M	10V
C6621	403 022 7703	CERAMIC	33P	J	50V

LOCATION	PARTS NO.	DESCRIPTION			
C6622	403 022 7703	CERAMIC	33P	J	50V
C6901	403 121 9509	CERAMIC	0.1U	Z	50V
C6902	403 248 1905	ELECT	10U	M	16V
C6903	403 003 3700	CERAMIC	0.022U	Z	25V
C6904	403 258 3807	ELECT	0.22U	M	50V
C6905	403 121 9509	CERAMIC	0.1U	Z	50V
C6921	403 121 9509	CERAMIC	0.1U	Z	50V
C6924	403 168 6202	MT-POLYEST	0.33U	J	50V
C6925	403 184 9805	MT-POLYEST	0.22U	J	50V
C6930	403 071 2001	CERAMIC	180P	K	50V
(RESISTORS)					
R1001	401 018 3708	CARBON	3.3K	JA	1/4W
R1002	401 023 1607	CARBON	820	JA	1/4W
R1003	401 019 1802	CARBON	3.9K	JA	1/4W
R1004	401 012 5609	CARBON	1K	JA	1/4W
R1005	401 017 0708	CARBON	270	JA	1/4W
R1006	401 023 1607	CARBON	820	JA	1/4W
R1007	401 012 5609	CARBON	1K	JA	1/4W
R1008	401 017 1705	CARBON	2.7K	JA	1/4W
R1009	401 022 1806	CARBON	680	JA	1/4W
R1010	401 016 3700	CARBON	2.2K	JA	1/4W
R1012	401 012 5609	CARBON	1K	JA	1/4W
R1013	401 012 5609	CARBON	1K	JA	1/4W
R1014	401 016 3700	CARBON	2.2K	JA	1/4W
R1018	401 012 5609	CARBON	1K	JA	1/4W
R1019	401 016 4707	CARBON	22K	JA	1/4W
R1020	401 014 5102	CARBON	15K	JA	1/4W
R1021	401 013 5202	CARBON	1.2K	JA	1/4W
R1022	401 020 0702	CARBON	470	JA	1/4W
R1026	401 012 9201	CARBON	1M	JA	1/4W
R1027	401 023 2703	CARBON	8.2K	JA	1/4W
R1028	401 015 2605	CARBON	1.8K	JA	1/4W
R1029	401 012 5609	CARBON	1K	JA	1/4W
R1032	401 016 4707	CARBON	22K	JA	1/4W
R1033	401 012 5609	CARBON	1K	JA	1/4W
R1035	401 020 0702	CARBON	470	JA	1/4W
R1036	401 014 4006	CARBON	1.5K	JA	1/4W
R1038	401 012 5609	CARBON	1K	JA	1/4W
R1040	401 014 2804	CARBON	150	JA	1/4W
R1043	401 016 3700	CARBON	2.2K	JA	1/4W
R1044	401 013 6308	CARBON	12K	JA	1/4W
R1046	401 018 4804	CARBON	33K	JA	1/4W
R1047	401 023 2703	CARBON	8.2K	JA	1/4W
R1048	401 020 1907	CARBON	4.7K	JA	1/4W
R1049	401 013 6308	CARBON	12K	JA	1/4W
R1052	401 012 5609	CARBON	1K	JA	1/4W
R1053	401 018 2701	CARBON	330	JA	1/4W
R1054	401 018 3708	CARBON	3.3K	JA	1/4W
R1058	401 017 1705	CARBON	2.7K	JA	1/4W
R1059	401 015 2605	CARBON	1.8K	JA	1/4W
R1063	401 016 4707	CARBON	22K	JA	1/4W
R1065	401 012 5609	CARBON	1K	JA	1/4W
R1071	401 017 1705	CARBON	2.7K	JA	1/4W
R1072	401 015 2605	CARBON	1.8K	JA	1/4W
R1104	401 021 1807	CARBON	560	JA	1/4W
R1105	401 012 5609	CARBON	1K	JA	1/4W
R1106	401 012 5609	CARBON	1K	JA	1/4W
R1107	401 016 3700	CARBON	2.2K	JA	1/4W
R1153	401 020 1907	CARBON	4.7K	JA	1/4W
R1154	401 020 1907	CARBON	4.7K	JA	1/4W
R1312	401 012 6903	CARBON	10K	JA	1/4W
R1601	401 021 1807	CARBON	560	JA	1/4W
R1602	401 022 0700	CARBON	68	JA	1/4W
R1621	401 016 4707	CARBON	22K	JA	1/4W
R1622	401 019 7705	CARBON	4.3K	JA	1/4W
R1623	401 014 4006	CARBON	1.5K	JA	1/4W
R1624	401 012 6903	CARBON	10K	JA	1/4W
R1625	401 022 3008	CARBON	6.8K	JA	1/4W

LOCATION	PARTS NO.	DESCRIPTION			
R1626	401 012 8006	CARBON	100K	JA	1/4W
R1627	401 016 2505	CARBON	220	JA	1/4W
R1628	401 012 4404	CARBON	100	JA	1/4W
R1629	401 016 3700	CARBON	2.2K	JA	1/4W
R1630	401 014 4006	CARBON	1.5K	JA	1/4W
R1631	401 022 3008	CARBON	6.8K	JA	1/4W
R1632	401 012 5609	CARBON	1K	JA	1/4W
R1633	401 021 1807	CARBON	560	JA	1/4W
R1691	401 022 1806	CARBON	680	JA	1/4W
R1693	401 012 5609	CARBON	1K	JA	1/4W
R2001	401 017 1705	CARBON	2.7K	JA	1/4W
R2002	401 012 6903	CARBON	10K	JA	1/4W
R2003	401 017 3709	CARBON	270K	JA	1/4W
R2004	401 016 7401	CARBON	240	JA	1/4W
R2005	401 016 0006	CARBON	20K	JA	1/4W
R2006	401 016 3700	CARBON	2.2K	JA	1/4W
R2007	401 014 9001	CARBON	16K	JA	1/4W
R2008	401 014 5102	CARBON	15K	JA	1/4W
R2010	401 018 3708	CARBON	3.3K	JA	1/4W
R2013 ⚠	402 068 1102	FUSIBLE RES	22	JA	1/4W
R2015	401 019 6104	CARBON	4.7	JA	1/4W
R2020	401 018 3708	CARBON	3.3K	JA	1/4W
R2035	401 014 5102	CARBON	15K	JA	1/4W
R2036	401 019 9501	CARBON	47	JA	1/4W
R2038	401 012 4404	CARBON	100	JA	1/4W
R2301	401 020 2805	CARBON	47K	JA	1/4W
R2302	401 020 2805	CARBON	47K	JA	1/4W
R2303	401 016 8408	CARBON	24K	JA	1/4W
R2304	401 016 8408	CARBON	24K	JA	1/4W
R2305	401 020 2805	CARBON	47K	JA	1/4W
R2306	401 020 2805	CARBON	47K	JA	1/4W
R2307	401 016 8408	CARBON	24K	JA	1/4W
R2308	401 016 8408	CARBON	24K	JA	1/4W
R2309	401 018 4804	CARBON	33K	JA	1/4W
R2310	401 018 4804	CARBON	33K	JA	1/4W
R2311	401 017 9701	CARBON	30K	JA	1/4W
R2312	401 017 9701	CARBON	30K	JA	1/4W
R2313	401 020 7800	CARBON	510	JA	1/4W
R2314	401 020 7800	CARBON	510	JA	1/4W
R2315	401 020 1907	CARBON	4.7K	JA	1/4W
R2316	401 020 1907	CARBON	4.7K	JA	1/4W
R2317	401 013 6308	CARBON	12K	JA	1/4W
R2318	401 013 6308	CARBON	12K	JA	1/4W
R2319	401 019 1802	CARBON	3.9K	JA	1/4W
R2320	401 019 1802	CARBON	3.9K	JA	1/4W
R2321	401 091 1004	MT-FILM	15K	FD	1/4W
R2322	401 107 2308	MT-FILM	12K	FD	1/4W
R2323	401 017 1705	CARBON	2.7K	JA	1/4W
R2324	401 012 5609	CARBON	1K	JA	1/4W
R2329	401 016 2505	CARBON	220	JA	1/4W
R2330	401 016 2505	CARBON	220	JA	1/4W
R2335	401 012 6903	CARBON	10K	JA	1/4W
R2336	401 016 4707	CARBON	22K	JA	1/4W
R2338	401 019 4605	CARBON	3.9M	JA	1/4W
R2339	401 012 5609	CARBON	1K	JA	1/4W
R2340	401 013 6308	CARBON	12K	JA	1/4W
R2343	401 019 3905	CARBON	390K	JA	1/4W
R2344	401 012 6903	CARBON	10K	JA	1/4W
R2345	401 012 6903	CARBON	10K	JA	1/4W
R2346	401 016 3700	CARBON	2.2K	JA	1/4W
R2347	401 012 6903	CARBON	10K	JA	1/4W
R2348	401 012 6903	CARBON	10K	JA	1/4W
R2349	401 012 6903	CARBON	10K	JA	1/4W
R2350	401 020 9200	CARBON	510K	JA	1/4W
R2351	401 020 2805	CARBON	47K	JA	1/4W
R2352	401 020 2805	CARBON	47K	JA	1/4W
R2353	401 016 8408	CARBON	24K	JA	1/4W
R2354	401 016 8408	CARBON	24K	JA	1/4W

LOCATION	PARTS NO.	DESCRIPTION			
R2355	401 018 4804	CARBON	33K	JA	1/4W
R2356	401 017 9701	CARBON	30K	JA	1/4W
R2360	401 016 4707	CARBON	22K	JA	1/4W
R2361	401 012 6903	CARBON	10K	JA	1/4W
R2368	401 012 5609	CARBON	1K	JA	1/4W
R2371	401 015 2605	CARBON	1.8K	JA	1/4W
R2380	401 016 5704	CARBON	220K	JA	1/4W
R2403	401 012 5609	CARBON	1K	JA	1/4W
R2406	401 012 5609	CARBON	1K	JA	1/4W
R3001 ⚠	402 067 7402	FUSIBLE RES	3.3	JA	1/2W
R3002	401 022 7105	CARBON	750	JA	1/4W
R3004	401 014 4006	CARBON	1.5K	JA	1/4W
R3008	401 020 2805	CARBON	47K	JA	1/4W
R3009	401 020 1907	CARBON	4.7K	JA	1/4W
R3010	401 020 1907	CARBON	4.7K	JA	1/4W
R3011	401 020 1907	CARBON	4.7K	JA	1/4W
R3012	401 020 1907	CARBON	4.7K	JA	1/4W
R3013	401 020 1907	CARBON	4.7K	JA	1/4W
R3014	401 016 0402	CARBON	200K	JA	1/4W
R3015	401 016 0402	CARBON	200K	JA	1/4W
R3018	401 012 6903	CARBON	10K	JA	1/4W
R3022	401 012 8006	CARBON	100K	JA	1/4W
R3023	401 012 5609	CARBON	1K	JA	1/4W
R3024	401 012 5609	CARBON	1K	JA	1/4W
R3025	401 012 5609	CARBON	1K	JA	1/4W
R3026	401 012 5609	CARBON	1K	JA	1/4W
R3027	401 012 6903	CARBON	10K	JA	1/4W
R3028	401 012 6903	CARBON	10K	JA	1/4W
R3029	401 012 6903	CARBON	10K	JA	1/4W
R3030	401 012 6903	CARBON	10K	JA	1/4W
R3032	401 018 4804	CARBON	33K	JA	1/4W
R3036	401 012 6903	CARBON	10K	JA	1/4W
R3038	401 012 5609	CARBON	1K	JA	1/4W
R3043	401 012 6903	CARBON	10K	JA	1/4W
R3501	401 012 8006	CARBON	100K	JA	1/4W
R3502	401 012 8006	CARBON	100K	JA	1/4W
R3503	401 018 5702	CARBON	330K	JA	1/4W
R3504	401 014 6000	CARBON	150K	JA	1/4W
R3505	401 014 5102	CARBON	15K	JA	1/4W
R3506	401 016 5704	CARBON	220K	JA	1/4W
R3507	401 014 6000	CARBON	150K	JA	1/4W
R3508	401 017 2702	CARBON	27K	JA	1/4W
R3516	401 012 6903	CARBON	10K	JA	1/4W
R3517	401 020 2805	CARBON	47K	JA	1/4W
R3518	401 020 2805	CARBON	47K	JA	1/4W
R3520	401 018 5702	CARBON	330K	JA	1/4W
R3521	401 012 6903	CARBON	10K	JA	1/4W
R3525	401 012 5609	CARBON	1K	JA	1/4W
R3526	401 016 3700	CARBON	2.2K	JA	1/4W
R3527	401 012 5609	CARBON	1K	JA	1/4W
R3528	401 020 7800	CARBON	510	JA	1/4W
R3529	401 020 7800	CARBON	510	JA	1/4W
R3533	401 014 4006	CARBON	1.5K	JA	1/4W
R3537	401 023 2703	CARBON	8.2K	JA	1/4W
R3546	401 020 1907	CARBON	4.7K	JA	1/4W
R3547	401 014 5102	CARBON	15K	JA	1/4W
R3549	401 012 6903	CARBON	10K	JA	1/4W
R3550	401 023 2703	CARBON	8.2K	JA	1/4W
R3551	401 012 6903	CARBON	10K	JA	1/4W
R3552	401 012 8006	CARBON	100K	JA	1/4W
R3553	401 016 5704	CARBON	220K	JA	1/4W
R3555	401 012 8006	CARBON	100K	JA	1/4W
R3556	401 012 6903	CARBON	10K	JA	1/4W
R3557	401 018 5702	CARBON	330K	JA	1/4W
R3558	401 020 0702	CARBON	470	JA	1/4W
R3560	401 012 5609	CARBON	1K	JA	1/4W

LOCATION	PARTS NO.	DESCRIPTION
R6003	401 012 9201	CARBON 1M JA 1/4W
R6004	401 012 9201	CARBON 1M JA 1/4W
R6005	401 021 9902	CARBON 620K JA 1/4W
R6006	401 019 3905	CARBON 390K JA 1/4W
R6007	401 021 4907	CARBON 560K JA 1/4W
R6010	401 018 5702	CARBON 330K JA 1/4W
R6011	401 018 5702	CARBON 330K JA 1/4W
R6016	401 012 8006	CARBON 100K JA 1/4W
R6017	401 023 7807	CARBON 91K JA 1/4W
R6018	401 023 7807	CARBON 91K JA 1/4W
R6019	401 016 3700	CARBON 2.2K JA 1/4W
R6021	401 016 3700	CARBON 2.2K JA 1/4W
R6022	401 022 3008	CARBON 6.8K JA 1/4W
R6611	401 013 9408	CARBON 1.3K JA 1/4W
R6612	401 015 2605	CARBON 1.8K JA 1/4W
R6613	401 021 1807	CARBON 560 JA 1/4W
R6621	401 021 2903	CARBON 5.6K JA 1/4W
R6622	401 012 5609	CARBON 1K JA 1/4W
R6623	401 023 1607	CARBON 820 JA 1/4W
R6624	401 015 2605	CARBON 1.8K JA 1/4W
R6901	401 012 5609	CARBON 1K JA 1/4W
R6902	401 018 2701	CARBON 330 JA 1/4W
R6903	401 021 8103	CARBON 620 JA 1/4W
R6904	401 012 6903	CARBON 10K JA 1/4W
R6905	401 018 5702	CARBON 330K JA 1/4W
R6906	401 012 6903	CARBON 10K JA 1/4W
R6907	401 018 3708	CARBON 3.3K JA 1/4W
R6908	401 023 0600	CARBON 82 JA 1/4W
R6909	401 012 5609	CARBON 1K JA 1/4W
R6910	401 020 7800	CARBON 510 JA 1/4W
R6911	401 021 2903	CARBON 5.6K JA 1/4W
R6912	401 019 1802	CARBON 3.9K JA 1/4W
R6921	401 019 1802	CARBON 3.9K JA 1/4W
R6923	401 012 6903	CARBON 10K JA 1/4W
R6924	401 012 6903	CARBON 10K JA 1/4W
R6925	401 015 3701	CARBON 18K JA 1/4W
R6926	401 014 5102	CARBON 15K JA 1/4W
R6927	401 013 6308	CARBON 12K JA 1/4W
R6930	401 018 4804	CARBON 33K JA 1/4W
(SWITCHES)		
S3101	645 000 3363	SWITCH,PUSH,REW
OR	613 139 4308	SW,PUSH,REW
S3102	645 000 3363	SWITCH,PUSH,PLAY
OR	613 139 4308	SW,PUSH,PLAY
S3103	645 000 3363	SWITCH,PUSH,REC
OR	613 139 4308	SW,PUSH,REC
S3104	645 000 3363	SWITCH,PUSH,EJECT
OR	613 139 4308	SW,PUSH,EJECT
S3105	645 000 3363	SWITCH,PUSH,FF
OR	613 139 4308	SW,PUSH,FF
S3106	645 000 3363	SWITCH,PUSH,STOP
OR	613 139 4308	SW,PUSH,STOP
S3107	645 000 3363	SWITCH,PUSH,PAUSE
OR	613 139 4308	SW,PUSH,PAUSE
S3108	645 000 3363	SWITCH,PUSH,POWER
OR	613 139 4308	SW,PUSH,POWER
S3117	645 000 3363	SWITCH,PUSH,CH +
OR	613 139 4308	SW,PUSH,CH +
S3118	645 000 3363	SWITCH,PUSH,CH -
OR	613 139 4308	SW,PUSH,CH -
(PROTECTOR)		
PR241	613 138 8888	CIRCUIT PROTECTOR
(MISCELLANEOUS)		
	613 053 8055	FIXER

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LOCATION	PARTS NO.	DESCRIPTION
COMPL PWB,VP-1		
COMPL.NO	613 145 6594	
(SEMICONDUCTORS)		
Q1802	405 019 2005	TR 2SC536-E-SPA-AC
OR	405 019 2807	TR 2SC536-F-SPA-AC
OR	405 011 8401	TR 2SC1740S-DCTP-Q
OR	405 011 8500	TR 2SC1740S-DCTP-R
OR	405 093 0607	TR KSC2785-Y
Q1850	405 004 4007	TR 2SA608-E-SPA-AC
OR	405 004 4601	TR 2SA608-F-SPA-AC
OR	405 006 1707	TR 2SA933S-TP-Q
OR	405 006 1806	TR 2SA933S-T93-R
OR	405 093 0508	TR KSA1175-Y
Q1851	405 016 0905	TR 2SC2839-E-SPA-AC
OR	405 016 1100	TR 2SC2839-F-SPA-AC
OR	405 012 9506	TR 2SC2058S-DCTP-Q
Q1852	405 016 0905	TR 2SC2839-E-SPA-AC
OR	405 016 1100	TR 2SC2839-F-SPA-AC
OR	405 012 9506	TR 2SC2058S-DCTP-Q
Q1855	405 019 2005	TR 2SC536-E-SPA-AC
OR	405 019 2807	TR 2SC536-F-SPA-AC
OR	405 011 8401	TR 2SC1740S-DCTP-Q
OR	405 011 8500	TR 2SC1740S-DCTP-R
OR	405 093 0607	TR KSC2785-Y
Q2901	405 019 2807	TR 2SC536-F-SPA-AC
OR	405 011 8500	TR 2SC1740S-DCTP-R
OR	405 019 3903	TR 2SC536-G-SPA-AC
OR	405 011 8609	TR 2SC1740S-DCTP-S
(INTEGRATED CIRCUITS)		
IC181	409 262 2003	IC LA7374
IC291	409 132 0801	IC LA7270
(DIODES)		
D1801	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
(VARIABLE RESISTORS)		
VR181	613 117 1664	VR,SEMI 1KB
OR	613 002 0345	SEMI VR 1KB
VR182	613 117 1718	VR,SEMI 2.2KB
OR	613 002 0369	SEMI VR 2.2KXB
(INDUCTORS)		
L1831	613 014 0838	COIL,INDUCTOR 6.8UHK
OR	613 014 4355	HF CHOKE 6.8UHK
L1832	613 014 0890	COIL,INDUCTOR 22UHK
OR	613 014 4416	HF CHOKE 22UHK
L1833	613 014 0968	COIL,INDUCTOR 82UHK
OR	613 014 4485	HF CHOKE 82UHK
L1834	613 014 0951	COIL,INDUCTOR 68UHK
OR	613 014 4478	HF CHOKE 68UHK
L1851	613 014 0821	COIL,INDUCTOR 5.6UHK
OR	613 014 4348	HF CHOKE 5.6UHK
L1852	613 014 0944	COIL,INDUCTOR 56UHK
OR	613 014 4461	HF CHOKE 56UHK
L1853	613 014 0876	COIL,INDUCTOR 15UHK
OR	613 014 4393	HF CHOKE 15UHK
L1854	613 014 0876	COIL,INDUCTOR 15UHK
OR	613 014 4393	HF CHOKE 15UHK
(CAPACITORS)		
C1801	403 154 3307	OS-SOLID 4.7U M 10V
C1802	403 001 1906	CERAMIC 0.01U M 16V
C1803	403 120 8602	CERAMIC 0.015U J 16V
C1804	403 001 1906	CERAMIC 0.01U M 16V

LOCATION	PARTS NO.	DESCRIPTION
C1805	403 193 8509	ELECT 0.33U M 50V
C1806	403 001 1906	CERAMIC 0.01U M 16V
C1808	403 001 1906	CERAMIC 0.01U M 16V
C1809	403 001 1906	CERAMIC 0.01U M 16V
C1810	403 001 1906	CERAMIC 0.01U M 16V
C1811	403 001 1906	CERAMIC 0.01U M 16V
C1812	403 001 1906	CERAMIC 0.01U M 16V
C1813	403 001 1906	CERAMIC 0.01U M 16V
C1814	403 001 1906	CERAMIC 0.01U M 16V
C1815	403 001 8004	CERAMIC 0.047U M 16V
C1816	403 001 8004	CERAMIC 0.047U M 16V
C1817	403 001 8004	CERAMIC 0.047U M 16V
C1818	403 001 8004	CERAMIC 0.047U M 16V
C1831	403 028 3402	CERAMIC 56P J 50V
C1832	403 019 9703	CERAMIC 27P J 50V
C1833	403 072 7500	CERAMIC 330P J 50V
C1834	403 073 2702	CERAMIC 390P J 50V
C1835	403 075 3103	CERAMIC 82P J 50V
C1851	403 001 1906	CERAMIC 0.01U M 16V
C1852	403 022 7703	CERAMIC 33P J 50V
C1853	403 022 7703	CERAMIC 33P J 50V
C1854	403 026 2209	CERAMIC 47P J 50V
C1855	403 028 3402	CERAMIC 56P J 50V
C1861	403 001 1906	CERAMIC 0.01U M 16V
C1862	403 163 7907	ELECT 47U M 6.3V
C2901	403 163 7907	ELECT 47U M 6.3V
C2902	403 001 1906	CERAMIC 0.01U M 16V
C2903	403 001 1906	CERAMIC 0.01U M 16V
C2904	403 001 1906	CERAMIC 0.01U M 16V
C2905	403 163 8409	ELECT 47U M 16V
C2906	403 001 1906	CERAMIC 0.01U M 16V
C2907	403 001 1906	CERAMIC 0.01U M 16V
C2908	403 193 8202	ELECT 0.1U M 50V
C2909	403 001 1906	CERAMIC 0.01U M 16V
C2910	403 001 1906	CERAMIC 0.01U M 16V
C2911	403 001 1906	CERAMIC 0.01U M 16V
C2912	403 001 1906	CERAMIC 0.01U M 16V
C2913	403 001 1906	CERAMIC 0.01U M 16V

(RESISTORS)

LOCATION	PARTS NO.	DESCRIPTION
R1801	401 021 2903	CARBON 5.6K JA 1/4W
R1802	401 013 6308	CARBON 12K JA 1/4W
R1803	401 016 4707	CARBON 22K JA 1/4W
R1805	401 016 4707	CARBON 22K JA 1/4W
R1806	401 012 5609	CARBON 1K JA 1/4W
R1807	401 020 0702	CARBON 470 JA 1/4W
R1808	401 016 3700	CARBON 2.2K JA 1/4W
R1809	401 016 3700	CARBON 2.2K JA 1/4W
R1810	401 012 5609	CARBON 1K JA 1/4W
R1811	401 013 9408	CARBON 1.3K JA 1/4W
R1812	401 021 2903	CARBON 5.6K JA 1/4W
R1813	401 021 2903	CARBON 5.6K JA 1/4W
R1814	401 018 4804	CARBON 33K JA 1/4W
R1815	401 018 4804	CARBON 33K JA 1/4W
R1816	401 016 3700	CARBON 2.2K JA 1/4W
R1817	401 016 3700	CARBON 2.2K JA 1/4W
R1831	401 021 1807	CARBON 560 JA 1/4W
R1832	401 020 0702	CARBON 470 JA 1/4W
R1850	401 015 2605	CARBON 1.8K JA 1/4W
R1851	401 012 5609	CARBON 1K JA 1/4W
R1852	401 016 4707	CARBON 22K JA 1/4W
R1853	401 016 4707	CARBON 22K JA 1/4W
R1854	401 019 0904	CARBON 390 JA 1/4W
R1855	401 019 0904	CARBON 390 JA 1/4W
R1856	401 023 1607	CARBON 820 JA 1/4W
R1857	401 023 1607	CARBON 820 JA 1/4W
R1858	401 023 1607	CARBON 820 JA 1/4W
R1859	401 014 4006	CARBON 1.5K JA 1/4W
R1860	401 017 0708	CARBON 270 JA 1/4W
R1873	401 012 5609	CARBON 1K JA 1/4W
R2901	401 019 6104	CARBON 4.7 JA 1/4W
R2902	401 012 3308	CARBON 10 JA 1/4W
R2903	401 015 1509	CARBON 180 JA 1/4W
R2904	401 013 4106	CARBON 120 JA 1/4W
R2905	401 012 5609	CARBON 1K JA 1/4W
R2906	401 016 3700	CARBON 2.2K JA 1/4W
R2907	401 015 1509	CARBON 180 JA 1/4W
R2908	401 012 5609	CARBON 1K JA 1/4W

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COMPL PWB,TM-1

COMPL.NO 613 144 4461

(REMOTE RECEIVERS)

RR711	613 129 0938	IR RECEIVER PACK UNIT
OR	613 134 9087	IR RECEIVER PACK UNIT

(DISPLAYS)

A7101	613 140 4007	FLUORESCENT TUBE
OR	613 140 4014	FLUORESCENT TUBE

(MISCELLANEOUS)

	613 139 2267	HOLDER FL

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COMPL PWB,PW-1

COMPL.NO 613 145 6877

(SEMICONDUCTORS)

Q5001	405 122 9601	TR 2SK2083-FD13
Q5002	405 017 9600	TR 2SC3330-T-AC
Q5003	405 088 9103	TR 2SA1703-S-AN

(INTEGRATED CIRCUITS)

IC511	409 067 7203	IC L5431-AA
IC512	409 297 7400	IC PQ12SZ11

(DIODES)

D5001	407 134 8900	DIODE DBC10G
D5003	407 091 6704	DIODE AP01C-V0
D5004	407 078 2705	DIODE 1SS244-T-77
D5005	407 078 2705	DIODE 1SS244-T-77
D5006	407 050 9302	ZENER DIODE GZB18C
D5007	407 078 2705	DIODE 1SS244-T-77
D5008	407 078 2705	DIODE 1SS244-T-77
D5011 ⚠	407 151 3308	PHOTO COUPLE PC120FB
D5101	407 158 1505	DIODE ERC30-02L38
D5102	408 019 0705	DIODE ERB84-009L38
D5103	407 100 6909	DIODE AG01-V2
OR	407 091 6902	DIODE ERA38-04-V5
D5104	407 078 2705	DIODE 1SS244-T-77
D5105	407 100 6909	DIODE AG01-V2
OR	407 091 6902	DIODE ERA38-04-V5
D5109	407 099 5105	ZENER DIODE MTZJ4.7B-T-77
D5113	407 099 7604	ZENER DIODE MTZJ18B-T-77
D5114	407 153 6208	THYRISTOR 3P4J

(INDUCTORS)

L5002 ⚠	613 140 6438	COIL,LINE FILTER
L5101	613 107 6884	FERRITE CORE
L5102	613 110 4198	COIL,INDUCTOR 10UH K
OR	645 002 4122	INDUCTOR 10U K

LOCATION	PARTS NO.	DESCRIPTION
(TRANSFORMER)		
T5001 ⚠	645 002 4412	TRANS,POWER,PULSE
(CAPACITORS)		
C5001 ⚠	404 055 5001	MT-POLYEST 0.22U M 250V
C5002 ⚠	404 055 4905	MT-POLYEST 0.068U M 250V
C5003 ⚠	404 032 8407	CERAMIC 470P M 400V
C5004 ⚠	404 032 8704	CERAMIC 2200P M 400V
C5010	403 238 1809	ELECT 47U M 400V
C5011	403 222 1808	ELECT 1U M 400V
C5012	403 058 9504	POLYESTER 0.018U J 50V
C5013	403 058 9504	POLYESTER 0.018U J 50V
C5014	403 243 9203	ELECT 2.2U M 250V
C5016	403 094 0800	OS-SOLID 2.2U M 16V
C5017	403 061 7702	POLYESTER 4700P J 50V
C5101	403 204 6401	ELECT 1000U M 16V
C5102	403 148 0305	ELECT 470U M 16V
C5104	403 243 8909	ELECT 1000U M 10V
C5105	403 147 9507	ELECT 470U M 6.3V
C5106	403 154 8302	ELECT 47U M 50V
C5107	403 126 4608	ELECT 100U M 25V
C5108	403 155 5409	ELECT 220U M 6.3V
C5109	403 168 6103	MT-POLYEST 0.1U J 50V
C5110	403 168 6103	MT-POLYEST 0.1U J 50V
C5111	403 121 9509	CERAMIC 0.1U Z 50V
C5112	403 126 4509	ELECT 100U M 16V
(RESISTORS)		
R5001 ⚠	402 064 1502	CARBON 2.7M KA 1/2W
R5010	401 069 4402	OXIDE-MT 68K JA 2W
R5011	401 090 1906	CARBON 1.5M JA 1/2W
R5012	401 016 4707	CARBON 22K JA 1/4W
R5014	401 019 3905	CARBON 390K JA 1/4W
R5015	401 019 3905	CARBON 390K JA 1/4W
R5016	401 019 3905	CARBON 390K JA 1/4W
R5017	401 019 3905	CARBON 390K JA 1/4W
R5018	401 009 5001	CARBON 33 JA 1/2W
R5019	401 007 0305	CARBON 100 JA 1/2W
R5020	401 057 5107	OXIDE-MT 0.47 JA 1W
R5021	401 017 2702	CARBON 27K JA 1/4W
R5022	401 011 8809	CARBON 1 JA 1/4W
R5023	401 016 1409	CARBON 22 JA 1/4W
R5024	401 012 6903	CARBON 10K JA 1/4W
R5025	401 012 5609	CARBON 1K JA 1/4W
R5103	401 014 2804	CARBON 150 JA 1/4W
R5105	401 107 5200	MT-FILM 560 FD 1/4W
R5106	401 107 5309	MT-FILM 620 FD 1/4W
R5107	401 012 4404	CARBON 100 JA 1/4W
R5108	401 021 2903	CARBON 5.6K JA 1/4W
R5109	401 106 9704	MT-FILM 82 FD 1/4W
R5112	401 013 6308	CARBON 12K JA 1/4W
R5113	401 154 6403	CARBON 430 JA 1/2W
R5114	401 154 6403	CARBON 430 JA 1/2W
R5118	401 023 2703	CARBON 8.2K JA 1/4W
R5119	401 016 3700	CARBON 2.2K JA 1/4W
R5120 ⚠	402 067 7600	FUSIBLE RES 1.5 JA 1/4W
R5121	401 016 1201	CARBON 22 JB 1/4W
(FUSE)		
F5001 ⚠	423 022 6506	FUSE 250V 2.5A
(CONNECTOR)		
CN501 ⚠	613 120 7912	CONNECTOR,INLET
(MISCELLANEOUS)		
	613 136 4554	HOLDER,FUSE

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LOCATION	PARTS NO.	DESCRIPTION
COMPL PWB,TB-1		
COMPL.NO	613 145 6600	
(SEMICONDUCTORS)		
Q8651	405 057 6201	TR 2SC4038-Q-TL2
OR	405 057 6409	TR 2SC4038-R-TL2
OR	405 123 7002	TR 2SD1991A-Q-(TA)
OR	405 123 7101	TR 2SD1991A-R-(TA)
Q8652	405 064 0100	TR 2SA1561-TL2-Q
OR	405 064 0209	TR 2SA1561-TL2-R
OR	405 123 6708	TR 2SB1320A-Q-(TA)
OR	405 123 6807	TR 2SB1320A-R-(TA)
(INTEGRATED CIRCUITS)		
IC861	409 120 3401	IC LA7221
OR	409 003 4501	IC BA7021
(DIODES)		
D8601	407 070 7104	ZENER DIODE GZS5.6X-BT
OR	407 053 6704	ZENER DIODE MTZ5.6B-T-77
D8602	407 070 7104	ZENER DIODE GZS5.6X-BT
OR	407 053 6704	ZENER DIODE MTZ5.6B-T-77
D8651	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
(CAPACITORS)		
C8502	403 071 5408	CERAMIC 220P J 50V
C8504	403 071 5408	CERAMIC 220P J 50V
C8506	403 069 0309	CERAMIC 1000P J 50V
C8508	403 069 0309	CERAMIC 1000P J 50V
C8513	403 071 5408	CERAMIC 220P J 50V
C8522	403 071 5408	CERAMIC 220P J 50V
C8524	403 071 5408	CERAMIC 220P J 50V
C8526	403 069 0309	CERAMIC 1000P J 50V
C8528	403 069 0309	CERAMIC 1000P J 50V
C8533	403 071 5408	CERAMIC 220P J 50V
C8601	403 189 2405	ELECT 10U M 16V
C8602	403 248 1905	ELECT 10U M 16V
C8604	403 121 9509	CERAMIC 0.1U Z 50V
C8605	403 121 9509	CERAMIC 0.1U Z 50V
C8611	403 179 4501	NP-ELECT 0.47U M 50V
(RESISTORS)		
R8501	401 012 5609	CARBON 1K JA 1/4W
R8502	401 012 5609	CARBON 1K JA 1/4W
R8503	401 022 1806	CARBON 680 JA 1/4W
R8504	401 022 1806	CARBON 680 JA 1/4W
R8505	401 016 5704	CARBON 220K JA 1/4W
R8508	401 012 5609	CARBON 1K JA 1/4W
R8521	401 012 5609	CARBON 1K JA 1/4W
R8522	401 012 5609	CARBON 1K JA 1/4W
R8523	401 022 1806	CARBON 680 JA 1/4W
R8524	401 022 1806	CARBON 680 JA 1/4W
R8525	401 016 5704	CARBON 220K JA 1/4W
R8528	401 012 5609	CARBON 1K JA 1/4W
R8601	401 022 6702	CARBON 75 JA 1/4W
R8602	401 022 6702	CARBON 75 JA 1/4W
R8603	401 012 5609	CARBON 1K JA 1/4W
R8604	401 012 5609	CARBON 1K JA 1/4W
R8605	401 012 5609	CARBON 1K JA 1/4W
R8626	401 018 2701	CARBON 330 JA 1/4W
R8627	401 018 2701	CARBON 330 JA 1/4W
R8651	401 012 6903	CARBON 10K JA 1/4W
R8652	401 021 2903	CARBON 5.6K JA 1/4W
R8653	401 021 2903	CARBON 5.6K JA 1/4W
R8654	401 021 0602	CARBON 56 JA 1/4W
R8655	401 013 6308	CARBON 12K JA 1/4W
R8656	401 023 2703	CARBON 8.2K JA 1/4W
R8657	401 020 1907	CARBON 4.7K JA 1/4W

LOCATION	PARTS NO.	DESCRIPTION
R8663	401 012 6903	CARBON 10K JA 1/4W
(JACKS)		
JK851	613 009 1529	SOCKET
JK852	613 085 8092	SOCKET
JK853	613 009 1529	SOCKET
JK854	613 085 8092	SOCKET
(CONNECTORS)		
CN871	613 105 6633	SOCKET,21P
CN872	613 105 6640	SOCKET,21P

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COMPL PWB,TN-5

COMPL.NO 613 146 8832

(SEMICONDUCTORS)		
Q6701	405 015 8407	TR 2SC2812-L5-TB
OR	405 015 8704	TR 2SC2812-L6-TB
OR	405 014 4509	TR 2SC2412K-T96-R
OR	405 014 4608	TR 2SC2412K-T96-S
Q6702	405 015 8407	TR 2SC2812-L5-TB
OR	405 015 8704	TR 2SC2812-L6-TB
OR	405 014 4509	TR 2SC2412K-T96-R
OR	405 014 4608	TR 2SC1214K-T96-S
(INTEGRATED CIRCUITS)		
IC671	409 304 6006	IC TDA8205
IC672	409 304 5900	IC TDA8204
IC673	409 018 4701	IC LA6458M-T1
(CRISTAL DEVICE)		
X6701	613 123 4154	OSC,CRYSTAL 11.648MHZ
(CERAMIC RESONATORS)		
XF671	645 000 2830	TRAP,CERAMIC 6.0MHZ
XF672	613 084 3173	FILTER,6.552MHZ
OR	613 130 6073	FILTER,6.552MHZ B.P.F
(INDUCTORS)		
L6701	613 014 0876	COIL,INDUCTOR 15UHK
L6702	613 015 6419	COIL,INDUCTOR 2.2UHJ
OR	613 014 8476	HF CHOKE 2.2UHJ
L6703	613 015 6419	COIL,INDUCTOR 2.2UHJ
OR	613 014 8476	HF CHOKE 2.2UHJ
L6704	613 015 6419	COIL,INDUCTOR 2.2UHJ
OR	613 014 8476	HF CHOKE 2.2UHJ
(CAPACITORS)		
C6701	403 069 5601	CERAMIC 0.01U K 50V
C6702	403 069 5601	CERAMIC 0.01U K 50V
C6703	403 069 5601	CERAMIC 0.01U K 50V
C6704	403 069 5601	CERAMIC 0.01U K 50V
C6708	403 018 7502	CERAMIC 220P J 50V
C6709	403 018 7502	CERAMIC 220P J 50V
C6710	403 070 2606	CERAMIC 0.1U Z 50V
C6711	403 075 0706	CERAMIC 6800P K 50V
C6712	403 075 0706	CERAMIC 6800P K 50V
C6713	403 069 5601	CERAMIC 0.01U K 50V
C6714	403 069 5601	CERAMIC 0.01U K 50V
C6715	403 139 0703	ELECT 100U M 6.3V
C6716	403 139 1809	ELECT 47U M 16V
C6717	403 011 4904	CERAMIC 120P J 50V
C6718	403 263 5704	MT-COMPO 0.22U J 50V
C6719	403 013 3004	CERAMIC 150P J 50V
C6720	403 075 0706	CERAMIC 6800P K 50V
C6721	403 012 6808	CERAMIC 15P J 50V
C6722	403 248 1905	ELECT 10U M 16V

LOCATION	PARTS NO.	DESCRIPTION
C6723	403 248 1905	ELECT 10U M 16V
C6724	403 232 9702	ELECT 220U M 6.3V
C6725	403 070 2606	CERAMIC 0.1U Z 50V
C6727	403 074 7607	CERAMIC 5600P K 50V
C6728	403 072 5605	CERAMIC 2700P K 50V
C6729	403 071 8102	CERAMIC 2200P K 50V
C6730	403 248 1905	ELECT 10U M 16V
C6731	403 074 7607	CERAMIC 5600P K 50V
C6732	403 071 8102	CERAMIC 2200P K 50V
C6733	403 072 5605	CERAMIC 2700P K 50V
C6734	403 248 1905	ELECT 10U M 16V
C6735	403 069 5601	CERAMIC 0.01U K 50V
C6737	403 139 1502	ELECT 10U M 16V
C6738	403 139 1502	ELECT 10U M 16V
C6739	403 189 2405	ELECT 10U M 16V
C6740	403 189 2405	ELECT 10U M 16V
C6743	403 069 5601	CERAMIC 0.01U K 50V
C6745	403 248 1905	ELECT 10U M 16V
C6746	403 248 1905	ELECT 10U M 16V
C6747	403 069 5601	CERAMIC 0.01U K 50V
C6753	403 069 5601	CERAMIC 0.01U K 50V
C6757	403 139 1007	ELECT 47U M 6.3V
C6758	403 031 2201	CERAMIC 680P J 50V
(RESISTORS)		
R6701	401 038 2002	MT-GLAZE 270 JA 1/10W
R6702	401 038 2101	MT-GLAZE 2.7K JA 1/10W
R6703	401 037 5608	MT-GLAZE 10K JA 1/10W
R6704	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R6705	401 037 5202	MT-GLAZE 100 JA 1/10W
R6706	401 038 2002	MT-GLAZE 270 JA 1/10W
R6707	401 039 0205	MT-GLAZE 82 JA 1/10W
R6715	401 038 6000	MT-GLAZE 43K JA 1/10W
R6716	401 037 8005	MT-GLAZE 15K JA 1/10W
R6717	401 038 7700	MT-GLAZE 5.6K JA 1/10W
R6718	401 038 6000	MT-GLAZE 43K JA 1/10W
R6719	401 038 7700	MT-GLAZE 5.6K JA 1/10W
R6720	401 037 5806	MT-GLAZE 1M JA 1/10W
R6722	401 037 7800	MT-GLAZE 150 JA 1/10W
R6723	401 038 5300	MT-GLAZE 39K JA 1/10W
R6726	401 038 9308	MT-GLAZE 68K JA 1/10W
R6727	401 038 9308	MT-GLAZE 68K JA 1/10W
R6728	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R6729	401 038 2101	MT-GLAZE 2.7K JA 1/10W
R6730	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R6731	401 037 8005	MT-GLAZE 15K JA 1/10W
R6732	401 037 8005	MT-GLAZE 15K JA 1/10W
R6733	401 038 9308	MT-GLAZE 68K JA 1/10W
R6734	401 038 9308	MT-GLAZE 68K JA 1/10W
R6735	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R6736	401 038 2101	MT-GLAZE 2.7K JA 1/10W
R6737	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R6738	401 037 8005	MT-GLAZE 15K JA 1/10W
R6739	401 037 8005	MT-GLAZE 15K JA 1/10W
R6740	401 038 0800	MT-GLAZE 22K JA 1/10W
R6741	401 038 0800	MT-GLAZE 22K JA 1/10W
R6742	401 038 5300	MT-GLAZE 39K JA 1/10W
R6743	401 038 5300	MT-GLAZE 39K JA 1/10W
R6745	401 038 9001	MT-GLAZE 680 JA 1/10W
R6748	401 110 6201	CARBON 10M JA 1/4W
R6750	401 017 0708	CARBON 270 JA 1/4W
R6751	401 038 7700	MT-GLAZE 5.6K JA 1/10W
(JUMPERS)		
J6701	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J6702	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J6703	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J6715	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J6726	401 037 5004	MT-GLAZE 0.000 ZA 1/10W

LOCATION	PARTS NO.	DESCRIPTION
J6730	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J6740	401 037 5004	MT-GLAZE 0.000 ZA 1/10W

****

COMPL PCB,MC-1

COMPL.NO	613 120 9060	

(DIODES)

D8001	407 094 1300	PHOTO COUPLE SPI-315-04-C
OR	407 043 0101	PHOTO DIODE ON2170-R

(RESISTORS)

R8001	401 026 0607	CARBON	270 JA	1/6W
OR	401 017 0708	CARBON	270 JA	1/4W
R8002	401 024 6700	CARBON	100 JA	1/6W
OR	401 012 4404	CARBON	100 JA	1/4W

(SWITCH)

S8001	613 022 4545	SPECIAL SWITCH

****

FLEXIBLE FLAT CABLE

	613 140 4069	FLEXIBLE FLAT CABLES CP-1 - MC-2

Parts No. TP30035

Parts number for Mechanical Service Manual TP30036

THORN EMI UK Rental Limited
The Park Centre, Arlington Business Park,
Theale, Reading, Berkshire RG7 4SA

June/'93/160 NS Printed in Japan

SM 531232

VR204NV

BLOCK DIAGRAMS,CIRCUIT DIAGRAMS & PRINTED WIRING BOARDS

TABLE OF CONTENTS

Page

1. OVERALL WIRING, MECHANISM CONNECTION, & BLOCK DIAGRAMS

OVERALL WIRING 1
MECHANISM CONNECTION 3
VIDEO CIRCUIT 4
SYSTEM CONTROL & SERVO CIRCUIT 7
AUDIO CIRCUIT 10

2. CIRCUIT DIAGRAMS & PRINTED WIRING BOARDS (P.W.B.)

PW-1 BOARD POWER SUPPLY 13
PW-1 P.W.B. 13
CP-1 P.W.B. 15
CP-1 BOARD (AD-A) AUDIO 17
CP-1 BOARD (VD-A) VIDEO 20
VIDEO CIRCUIT WAVEFORMS 22
ON SCREEN (IC162) WAVEFORMS 22
VP-1 BOARD (VP-A) VIDEO PRE-AMP 23
VP-1 P.W.B. 24
VP-1 BOARD (AP-A) AUDIO PRE-AMP 25
IC301 SYSTEM CONTROL,TIMER, & TUNING CONTROL MPU PIN FUNCTIONS TABLE 26
CP-1 BOARD (SY-A,SV-A) SYSTEM CONTROL & SERVO 27
SERVO CIRCUIT WAVEFORMS 29
CP-1 BOARD (TN-A,CV-A) TUNER, IF & RF CONVERTER CONNECTION 30
TM-1 BOARD DISPLAY (FLD) 32
TM-1 P.W.B. 32
A7101 DISPLAY (FLD) GRID/ANODE ASSIGNMENT DRAWING & TABLE 33
TN-5 P.W.B. 34
TN-5 BOARD NICAM 35
TB-1 BOARD TERMINAL & INPUT SELECTION 37
TB-1 P.W.B. 39

TP4H/E-TH 36N

REFERENCE NO.SM531232

NOTES:

1. All resistance values in "OHMS" unless otherwise noted. (K=1,000 M=1,000,000)
2. All capacitance values in "μfd" unless otherwise noted. p=pico farad
3. All inductance values in "mH" unless otherwise noted. μ=micro henry

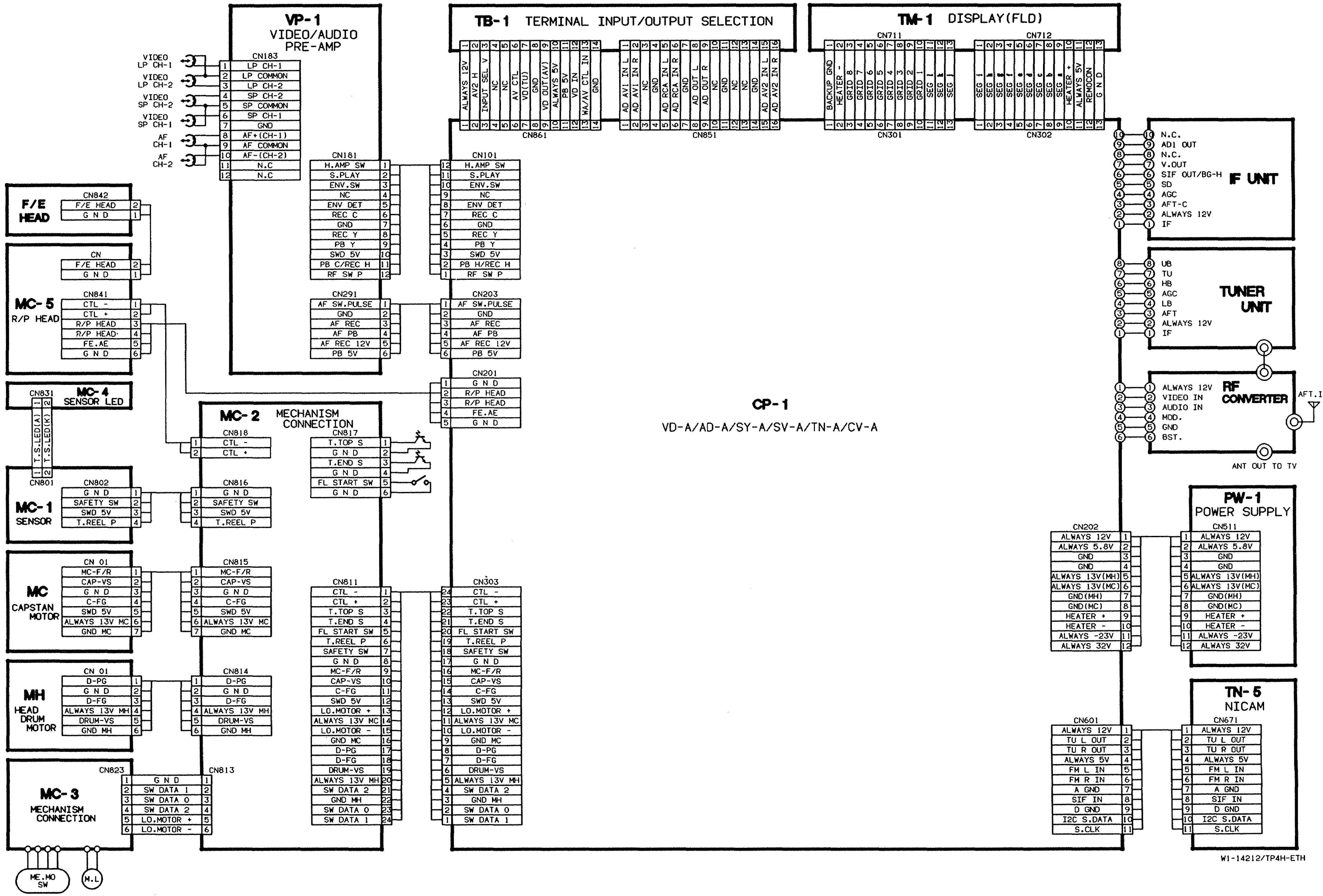
PRODUCT SAFETY NOTICE

THE COMPONENTS DESIGNATED BY A SYMBOL (⚠) IN THIS SCHEMATIC DIAGRAM DESIGNATES COMPONENTS WHOSE VALUE ARE OF SPECIAL SIGNIFICANCE TO PRODUCT SAFETY. SHOULD ANY COMPONENT DESIGNATED BY A SYMBOL NEED TO BE REPLACED, USE ONLY THE PART DESIGNATED IN THE PARTS LIST. DO NOT DEVIATE FROM THE RESISTANCE, WATTAGE AND VOLTAGE RATINGS SHOWN.

PAL-A

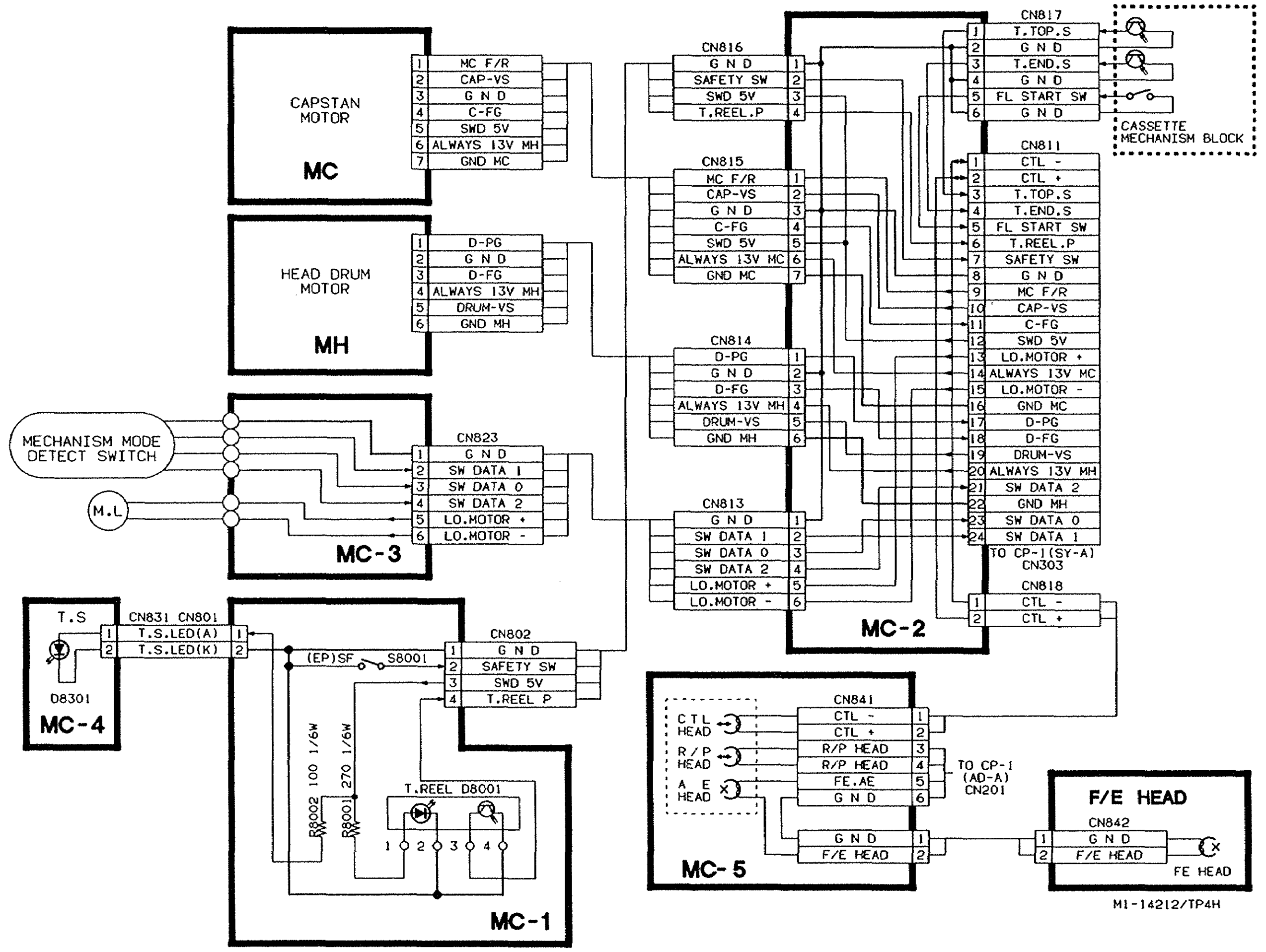
1. OVERALL WIRING,MECHANISM CONNECTION, & BLOCK DIAGRAMS

OVERALL WIRING



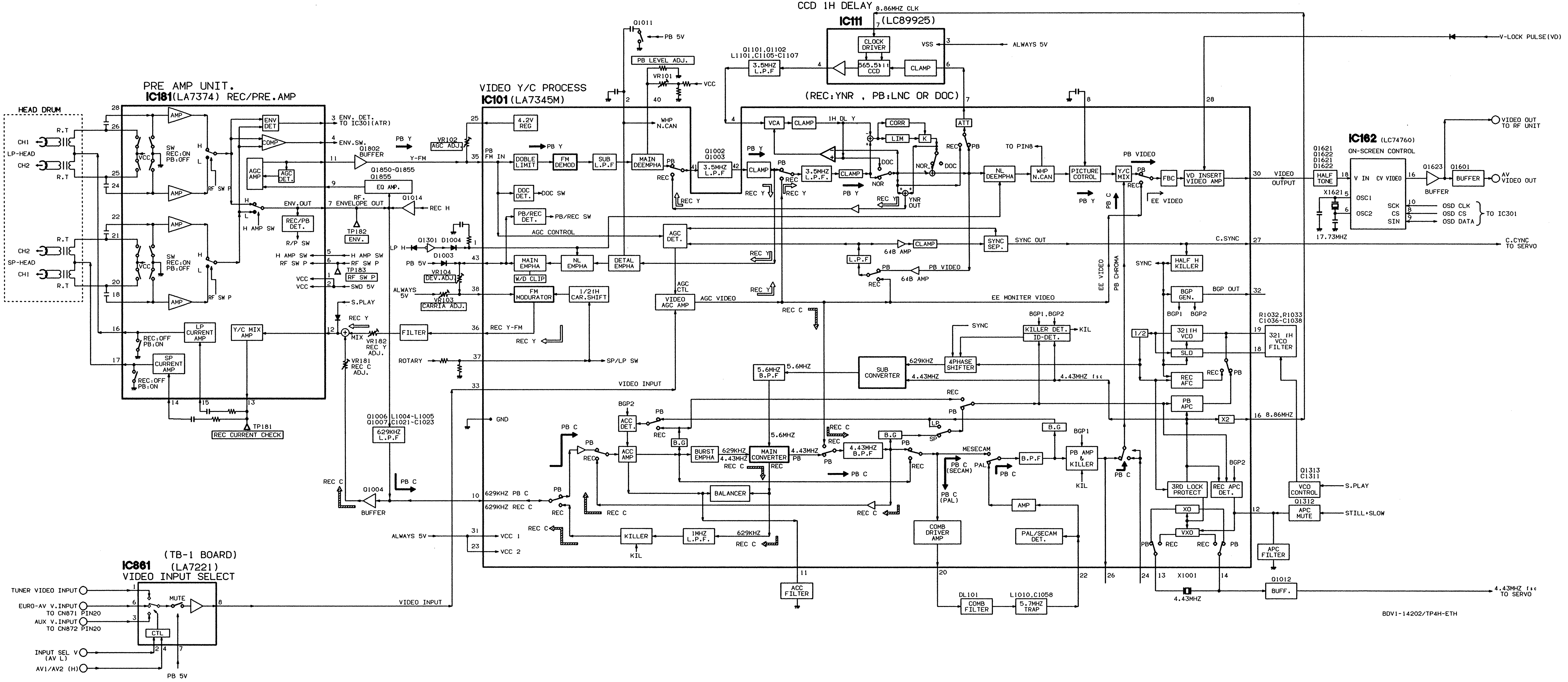
VP-1
VIDEO/AUDIO PRE-AMP
CN183
VIDEO LP CH-1
VIDEO LP CH-2
VIDEO SP CH-2
VIDEO SP CH-1
AF CH-1
AF CH-2
LP CH-1
LP COMMON
LP CH-2
SP CH-2
SP COMMON
SP CH-1
GND
AF+(CH-1)
AF COMMON
AF-(CH-2)
N.C
CN181
CN101
H.AMP SW
S.PLAY
ENV.SW
NC
ENV DET
REC C
GND
REC Y
PB Y
SWD 5V
PB C/REC H
RF SW P
CN291
CN203
AF SW.PULSE
AF REC
AF PB
AF REC 12V
PB 5V
TB-1 TERMINAL INPUT/OUTPUT SELECTION
CN861
CN851
ALWAYS 12V
AV2 H
INPUT SEL V
AV CTL
VD(TU)
VD OUT(AV)
ALWAYS 5V
PB 5V
VD IN
WA/AV CTL IN
AD AV1 IN L
AD AV1 IN R
AD RCA IN L
AD RCA IN R
AD OUT L
AD OUT R
AD AV2 IN L
AD AV2 IN R
TM-1 DISPLAY(FLD)
CN711
CN712
CN301
CN302
BACKUP GND
HEATER -
GRID 8
GRID 7
GRID 6
GRID 5
GRID 4
GRID 3
GRID 2
GRID 1
SEG 1
HEATER +
ALWAYS 5V
REMOCON
G N D
F/E HEAD
CN842
F/E HEAD
G N D
CN
MC-5
R/P HEAD
CN841
CTL -
CTL +
R/P HEAD
R/P HEAD-
FE.AE
CN831
MC-4
SENSOR LED
T.S.LED(A)
T.S.LED(K)
CN801
MC-1
SENSOR
CN802
SAFETY SW
SWD 5V
T.REEL P
MC
CAPSTAN MOTOR
CN 01
MC-F/R
CAP-VS
C-FG
ALWAYS 13V MC
GND MC
MH
HEAD DRUM MOTOR
D-PG
D-FG
ALWAYS 13V MH
DRUM-VS
GND MH
MC-3
MECHANISM CONNECTION
CN823
CN813
SW DATA 1
SW DATA 0
SW DATA 2
LO.MOTOR +
LO.MOTOR -
ME.MO SW
M.L
MC-2
MECHANISM CONNECTION
CN818
CN816
CN815
CN814
CN817
T.TOP S
T.END S
FL START SW
CN811
CN303
CN201
CP-1
VD-A/AD-A/SY-A/SV-A/TN-A/CV-A
IF UNIT
N.C.
AD1 OUT
V.OUT
SIF OUT/BG-H
SD
AGC
AFT-C
ALWAYS 12V
IF
TUNER UNIT
UB
TU
HB
LB
AFT
RF CONVERTER
VIDEO IN
AUDIO IN
MOD.
GND
BST.
AFT.IN
ANT OUT TO TV
PW-1
POWER SUPPLY
CN202
CN511
ALWAYS 5.8V
ALWAYS 13V(MH)
ALWAYS 13V(MC)
GND(MH)
GND(MC)
HEATER +
HEATER -
ALWAYS -23V
ALWAYS 32V
TN-5
NICAM
CN601
CN671
TU L OUT
TU R OUT
FM L IN
FM R IN
A GND
SIF IN
D GND
I2C S.DATA
S.CLK
W1-14212/TP4H-ETH

MECHANISM CONNECTION



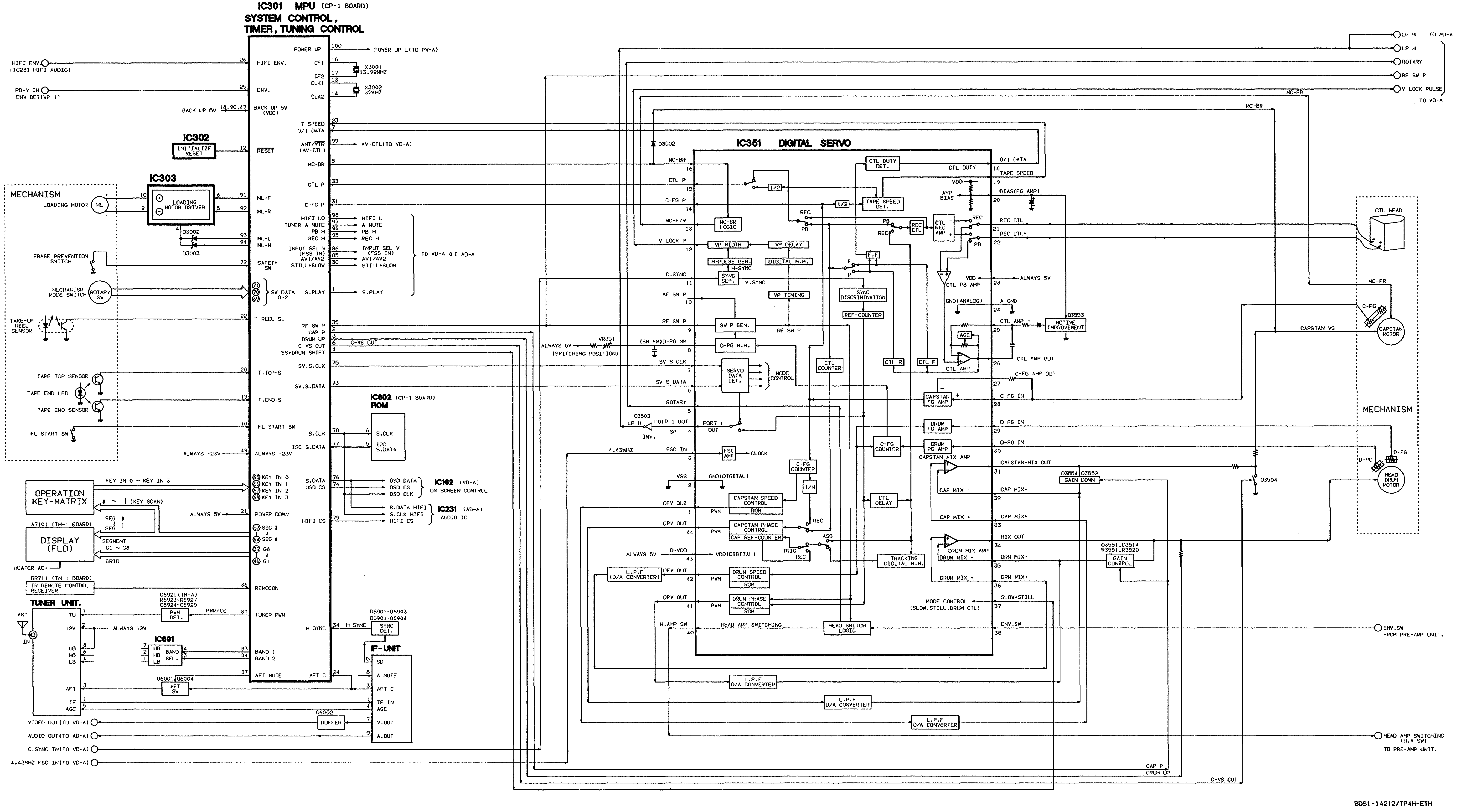
CAPSTAN MOTOR
MC
MC F/R
CAP-VS
G N D
C-FG
SWD 5V
ALWAYS 13V MH
GND HC
HEAD DRUM MOTOR
MH
D-PG
D-FG
ALWAYS 13V MH
DRUM-VS
GND MH
MECHANISM MODE DETECT SWITCH
M.L
MC-3
CN823
SW DATA 1
SW DATA 0
SW DATA 2
LO.MOTOR +
LO.MOTOR -
T.S
D8301
MC-4
CN831
CN801
T.S.LED(A)
T.S.LED(K)
(EP)SF
S8001
R8002 100 1/6W
R8001 270 1/6W
T.REEL D8001
CN802
SAFETY SW
SWD 5V
T.REEL P
MC-1
CN816
CN815
CN814
CN813
CN817
T.TOP.S
T.END.S
FL START SW
CASSETTE MECHANISM BLOCK
CN811
CTL -
CTL +
T.REEL.P
LO.MOTOR +
ALWAYS 13V MC
GND MC
SW DATA 2
TO CP-1(SY-A) CN303
CN818
MC-2
CTL HEAD
R/P HEAD
A E HEAD
CN841
R/P HEAD
FE.AE
TO CP-1 (AD-A) CN201
MC-5
F/E HEAD
CN842
F/E HEAD
FE HEAD
W1-14212/TP4H

VIDEO CIRCUIT

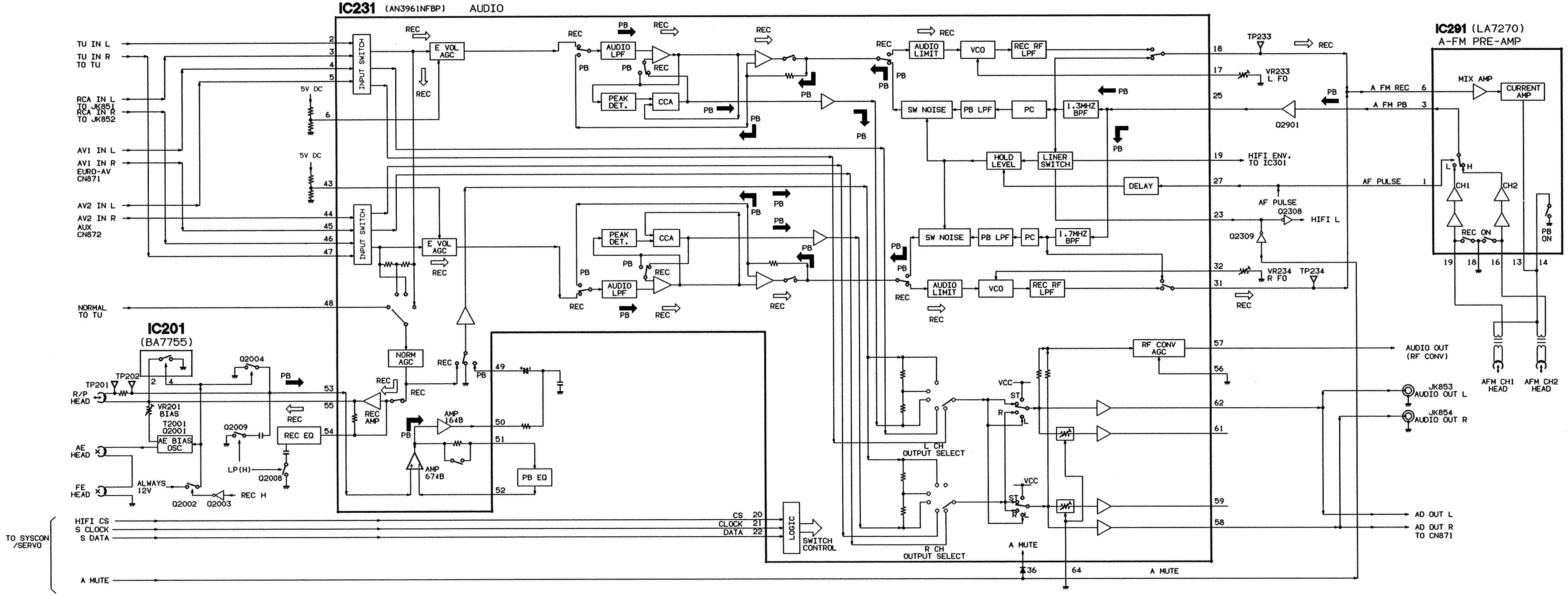


HEAD DRUM
CH1
LP-HEAD
CH2
SP-HEAD
R.T
PRE AMP UNIT.
IC181(LA7374) REC/PRE.AMP
AMP
AGC AMP
AGC DET.
ENV DET
COMP
SW REC:ON PB:OFF
VCC
RF SW P
H AMP SW
REC/PB DET.
R/P SW
ENV.OUT
LP CURRENT AMP
SP CURRENT AMP
Y/C MIX AMP
REC:OFF PB:ON
3 ENV. DET. TO IC301(ATR)
4 ENV.SW.
Q1802 BUFFER
Y-FM
Q1850-Q1855
EQ AMP.
RF. ENVELOPE OUT
Q1014
REC H
TP182 ENV.
TP183 RF SW P
H AMP SW
RF SW P
SWD 5V
S.PLAY
REC Y
MIX
FILTER
VR182 REC Y ADJ.
VR181 REC C ADJ.
TP181 REC CURRENT CHECK
Q1006 Q1007 L1004-L1005 C1021-C1023
629KHZ L.P.F
REC C
Q1004 BUFFER
PB C
VIDEO Y/C PROCESS
IC101(LA7345M)
4.2V REG
VR102 AGC ADJ.
PB Y
DOBLE LIMIT
FM DEMOD
SUB L.P.F
MAIN DEEMPHA
DOC DET.
DOC SW
PB/REC DET.
PB/REC SW
AGC CONTROL
AGC DET.
MAIN EMPHA
W/D CLIP
NL EMPHA
DETAL EMPHA
FM MODURATOR
1/2H CAR.SHIFT
Q1301 D1004
D1003
VR104 DEV.ADJ
VR103 CARRIA ADJ.
ALWAYS 5V
LP H
PB 5V
VIDEO AGC AMP
AGC VIDEO
REC Y-FM
ROTARY
SP/LP SW
VIDEO INPUT
GND
Q1011
PB LEVEL ADJ.
VR101
WHP N.CAN
Q1002 Q1003
3.5MHZ L.P.F
CCD 1H DELAY
IC111 (LC89925)
8.86MHZ CLK
CLOCK DRIVER
565.5H CCD
CLAMP
VSS
ALWAYS 5V
(REC:YNR , PB:LNC OR DOC)
Q1101,Q1102 L1101,C1105-C1107
VCA
CLAMP
1H DL Y
CORR
LIM
K
NOR
DOC
YNR OUT
ATT
NL DEEMPHA
TO PIN8
WHP N.CAN
PICTURE COTROL
Y/C MIX
FBC
VD INSERT VIDEO AMP
PB VIDEO
EE VIDEO
V-LOCK PULSE(VD)
VIDEO OUTPUT
SYNC SEP.
SYNC OUT
C.SYNC
C.CYNC TO SERVO
64B AMP
L.P.F
EE MONITER VIDEO
EE VIDEO
PB CHROMA
HALF H KILLER
BGP GEN.
BGP OUT
BGP1 BGP2
321 1H VCO
SLD
REC AFC
PB APC
X2
3RD LOCK PROTECT
REC APC DET.
XO
VXO
X1001 4.43MHZ
1/2
KILLER DET. ID-DET.
KIL
SYNC
4PHASE SHIFTER
SUB CONVERTER
629KHZ
4.43MHZ
5.6MHZ B.P.F
5.6MHZ
4.43MHZ fsc
ACC DET.
ACC AMP
B.G
BURST EMPHA
MAIN CONVERTER
4.43MHZ B.P.F
BALANCER
KILLER
1MHZ L.P.F.
629KHZ PB C
629KHZ REC C
ALWAYS 5V
VCC 1
VCC 2
ACC FILTER
MESECAM
PB C (SECAM)
PB C (PAL)
B.P.F
PB AMP & KILLER
BGP1
AMP
COMB DRIVER AMP
PAL/SECAM DET.
DL101 COMB FILTER
L1010,C1058 5.7MHZ TRAP
IC162 (LC74760)
ON-SCREEN CONTROL
Q1621 Q1622 D1621 D1622
HALF TONE
V IN
CV VIDEO
OSC1
OSC2
X1621
17.73MHZ
SCK
CS
SIN
OSD CLK
OSD CS
OSD DATA
TO IC301
Q1623 BUFFER
Q1601 BUFFER
VIDEO OUT TO RF UNIT
AV VIDEO OUT
R1032,R1033 C1036-C1038
321 1H VCO FILTER
8.86MHZ
Q1313 C1311
VCO CONTROL
S.PLAY
Q1312 APC MUTE
STILL+SLOW
APC FILTER
Q1012 BUFF.
4.43MHZ fsc TO SERVO
IC861 (TB-1 BOARD) (LA7221)
VIDEO INPUT SELECT
TUNER VIDEO INPUT
EURO-AV V.INPUT TO CN871 PIN20
AUX V.INPUT TO CN872 PIN20
MUTE
CTL
INPUT SEL V (AV L)
AV1/AV2 (H)
PB 5V
VIDEO INPUT
BDV1-14202/TP4H-ETH

SYSTEM CONTROL & SERVO CIRCUIT


IC301 MPU (CP-1 BOARD)
SYSTEM CONTROL, TIMER, TUNING CONTROL
IC302 INITIALIZE RESET
IC303 LOADING MOTOR DRIVER
MECHANISM
LOADING MOTOR
ERASE PREVENTION SWITCH
MECHANISM MODE SWITCH
ROTARY SW
TAKE-UP REEL SENSOR
TAPE TOP SENSOR
TAPE END LED
TAPE END SENSOR
FL START SW
HIFI ENV (IC231 HIFI AUDIO)
PB-Y IN ENV DET(VP-1)
BACK UP 5V
POWER UP L(TO PW-A)
X3001 13.92MHZ
X3002 32KHZ
AV-CTL(TO VD-A)
HIFI L
A MUTE
PB H
REC H
INPUT SEL V (FSS IN)
AV1/AV2
STILL+SLOW
S.PLAY
TO VD-A or AD-A
C-VS CUT
ALWAYS -23V
OPERATION KEY-MATRIX
KEY IN 0 ~ KEY IN 3
(KEY SCAN)
A7101 (TM-1 BOARD)
DISPLAY (FLD)
SEGMENT G1 ~ G8
GRID
HEATER AC+
RR711 (TM-1 BOARD) IR REMOTE CONTROL RECEIVER
IC602 (CP-1 BOARD) ROM
IC162 (VD-A) ON SCREEN CONTROL
IC231 (AD-A) AUDIO IC
TUNER UNIT.
ANT IN
ALWAYS 12V
Q6921 (TN-A) R6923-R6927 C6924-C6925 PWM DET.
IC691 BAND SEL.
Q6001, Q6004 AFT SW
Q6002 BUFFER
D6901-D6903 D6901-D6904 SYNC DET.
IF-UNIT
VIDEO OUT(TO VD-A)
AUDIO OUT(TO AD-A)
C.SYNC IN(TO VD-A)
4.43MHZ FSC IN(TO VD-A)
IC351 DIGITAL SERVO
D3502
MC-BR LOGIC
1/2
CTL DUTY DET.
TAPE SPEED DET.
REC CTL
CTL REC AMP
VP WIDTH
VP DELAY
H-PULSE GEN.
DIGITAL M.M.
SYNC SEP.
F.F
SYNC DISCRIMINATION
REF-COUNTER
VP TIMING
SW P GEN.
D-PG M.M.
SERVO DATA DET.
MODE CONTROL
CTL COUNTER
CTL R
CTL F
CTL AMP
CTL PB AMP
AGC
MOTIVE IMPROVEMENT
Q3553
ALWAYS 5V
VR351 (SWITCHING POSITION)
Q3503 INV.
CAPSTAN FG AMP
DRUM FG AMP
DRUM PG AMP
D-FG COUNTER
C-FG COUNTER
CAPSTAN MIX AMP
CAPSTAN-MIX OUT
D3554 D3552 GAIN DOWN
Q3504
FSC AMP
CLOCK
4.43MHZ
CAPSTAN SPEED CONTROL ROM
CAPSTAN PHASE CONTROL
CAP REF-COUNTER
DRUM SPEED CONTROL ROM
DRUM PHASE CONTROL ROM
CTL DELAY
TRACKING DIGITAL M.M.
DRUM MIX AMP
Q3551, C3514 R3551, R3520 GAIN CONTROL
MODE CONTROL (SLOW, STILL, DRUM CTL)
HEAD SWITCH LOGIC
HEAD AMP SWITCHING
L.P.F (D/A CONVERTER)
LP H
ROTARY
RF SW P
V LOCK PULSE
TO AD-A
TO VD-A
MC-FR
MC-BR
CTL HEAD
C-FG
CAPSTAN-VS
CAPSTAN MOTOR
D-PG
D-FG
HEAD DRUM MOTOR
ENV.SW FROM PRE-AMP UNIT.
HEAD AMP SWITCHING (H.A SW) TO PRE-AMP UNIT.
CAP P
DRUM UP
C-VS CUT
BDS1-14212/TP4H-ETH
K J I H G F E D C B A
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

AUDIO CIRCUIT



IC231 (AN3961NFBP) AUDIO
IC291 (LA7270)
A-FM PRE-AMP
IC201 (BA7755)
TU IN L
TU IN R
TO TU
RCA IN L
TO JK851
RCA IN R
TO JK852
AV1 IN L
AV1 IN R
EURO-AV
CN871
AV2 IN L
AV2 IN R
AUX
CN872
NORMAL
TO TU
INPUT SWITCH
E VOL AGC
5V DC
AUDIO LPF
PEAK DET.
CCA
AUDIO LIMIT
VCO
REC RF LPF
SW NOISE
PB LPF
PC
1.3MHZ BPF
1.7MHZ BPF
HOLD LEVEL
LINER SWITCH
DELAY
NORM AGC
REC AMP
REC EQ
PB EQ
AMP 164B
AMP 674B
RF CONV AGC
L CH OUTPUT SELECT
R CH OUTPUT SELECT
LOGIC
SWITCH CONTROL
REC
PB
TP233
VR233 L FO
VR234 R FO
TP234
Q2901
A FM REC
A FM PB
AF PULSE
MIX AMP
CURRENT AMP
CH1
CH2
REC ON
PB ON
HIFI ENV. TO IC301
HIFI L
Q2308
Q2309
AFM CH1 HEAD
AFM CH2 HEAD
AUDIO OUT (RF CONV)
JK853 AUDIO OUT L
JK854 AUDIO OUT R
AD OUT L
AD OUT R TO CN871
VCC
ST
A MUTE
TP201
TP202
R/P HEAD
VR201 BIAS
T2001
Q2001
AE BIAS OSC
AE HEAD
FE HEAD
ALWAYS 12V
Q2002
Q2003
REC H
Q2004
Q2009
Q2008
LP(H)
HIFI CS
S CLOCK
S DATA
TO SYSCON /SERVO
CS
CLOCK
DATA
A MUTE

BDA1-14212/TP4H-ETH

K

2. CIRCUIT DIAGRAMS & PRINTED WIRING BOARDS (P.W.B.)

PW-1 BOARD POWER SUPPLY

J

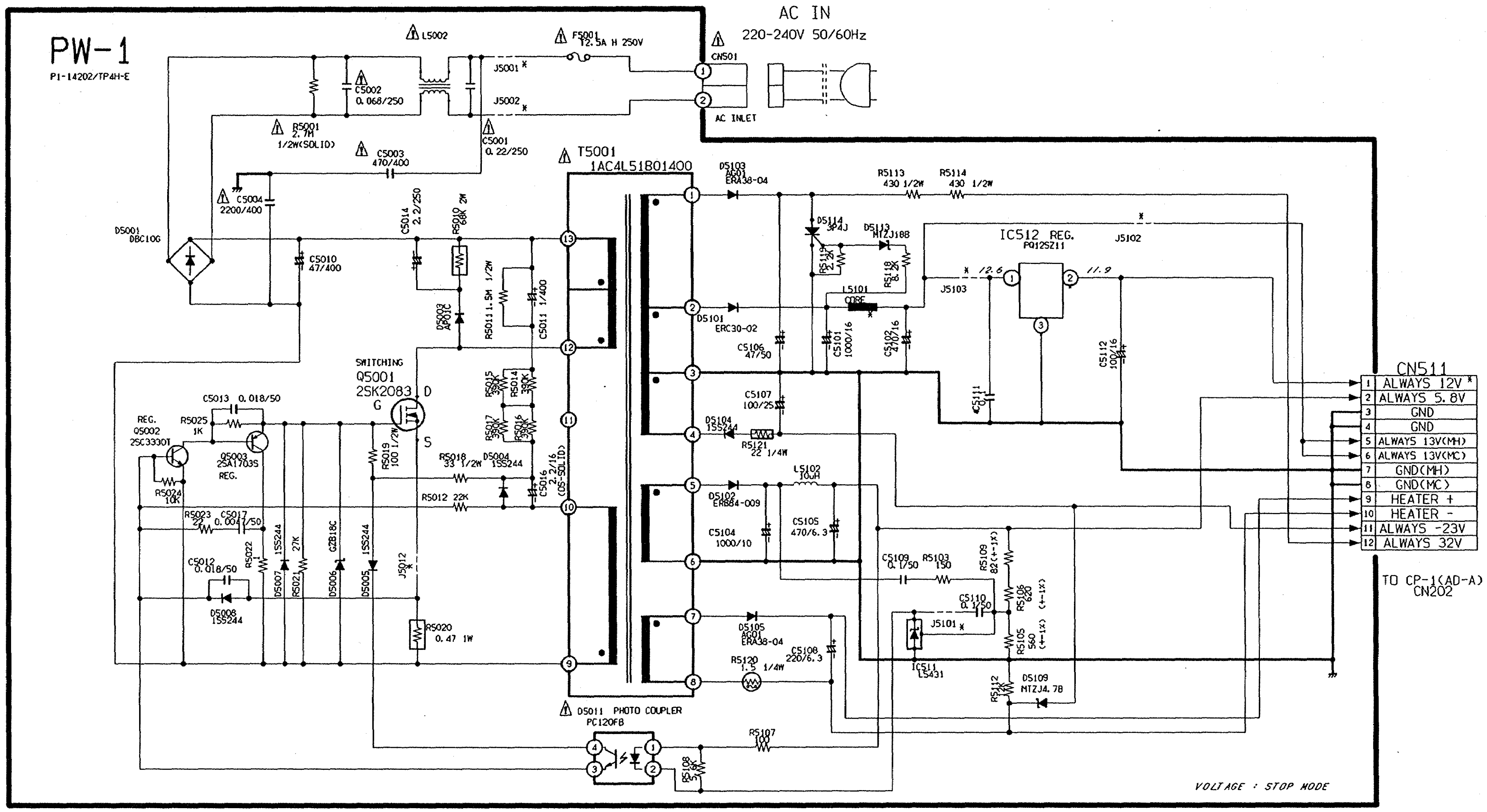
I

H

G

F

E



PW-1
P1-14202/TP4H-E
AC IN
220-240V 50/60Hz
CN501
AC INLET
L5002
F5001 T2.5A H 250V
J5001
J5002
C5002 0.068/250
R5001 2.7M 1/2W(SOLID)
C5001 0.22/250
C5003 470/400
C5004 2200/400
D5001 D8C10G
C5010 47/400
C5014 2.2/250
R5010 68K 2W
D5003
R5011 1.5M 1/2W
C5011 1/400
T5001 1AC4L51B01400
SWITCHING Q5001 2SK2083
G D S
C5013 0.018/50
REG. Q5002 2SC3330T
R5025 1K
Q5003 2SA1703S REG.
R5024 10K
R5023 22
C5017 0.0047/50
R5022
C5012 0.018/50
D5008 1SS244
D5007 1SS244
R5021 27K
D5006 GZB18C
D5005 1SS244
J5012
R5019 100 1/2W
R5018 33 1/2W
D5004 1SS244
R5012 22K
R5015 39K
R5014 39K
R5017 39K
R5016 39K
C5016 2.2/16 (OS-SOLID)
R5020 0.47 1W
D5011 PHOTO COUPLER PC120FB
D5103 AG01 ERA38-04
D5101 ERC30-02
D5104 1SS244
D5102 ER884-009
D5105 AG01 ERA38-04
R5113 430 1/2W
R5114 430 1/2W
D5114 3P4J
D5113 MTZJ18B
R5119 2.2K
R5118 8.2K
L5101 CORE
C5106 47/50
C5101 1000/16
C5102 470/16
C5107 100/25
R5121 22 1/4W
L5102 10uH
C5104 1000/10
C5105 470/6.3
C5108 220/6.3
R5120 1.5 1/4W
IC512 REG. PQ12SZ11
J5102
J5103
12.6
11.9
C5111
C5112 100/16
C5109 0.1/50
R5103 150
R5109 82(+-1%)
C5110 0.1/50
R5106 620 (+-1%)
J5101
IC511 LS431
R5105 560 (+-1%)
R5112
D5109 MTZJ4.7B
R5107 100
R5108 5.6K
CN511
1 ALWAYS 12V
2 ALWAYS 5.8V
3 GND
4 GND
5 ALWAYS 13V(MH)
6 ALWAYS 13V(MC)
7 GND(MH)
8 GND(MC)
9 HEATER +
10 HEATER -
11 ALWAYS -23V
12 ALWAYS 32V
TO CP-1(AD-A) CN202
VOLTAGE : STOP MODE

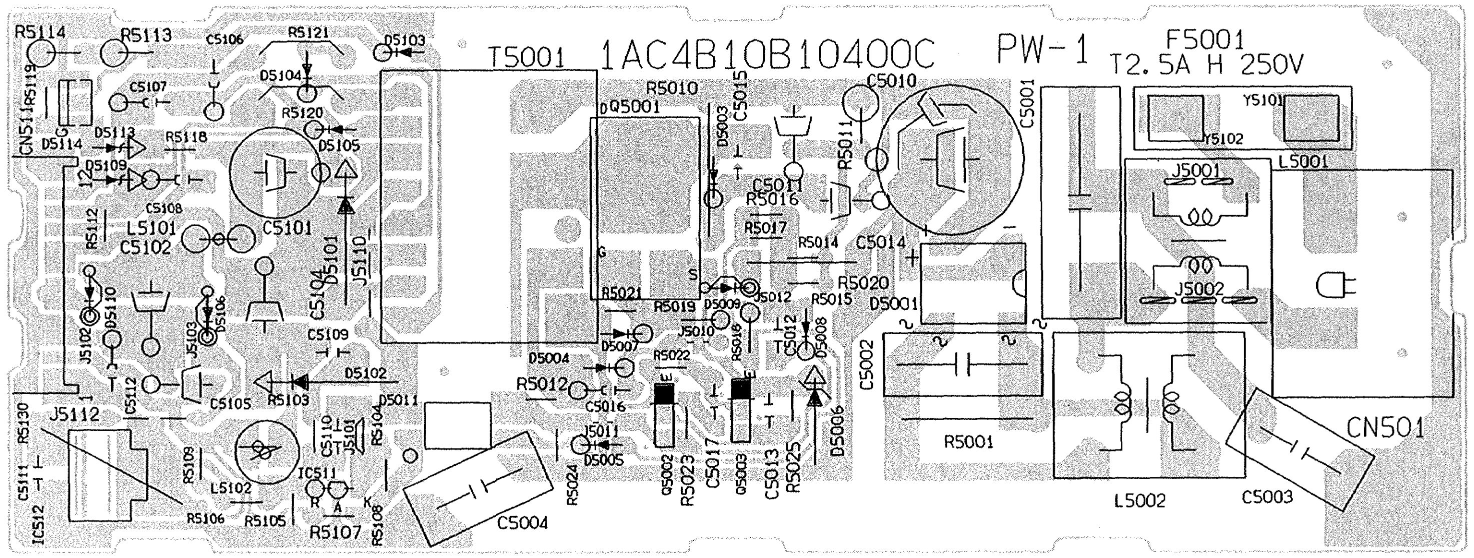
D

PW-1 P.W.B.

C

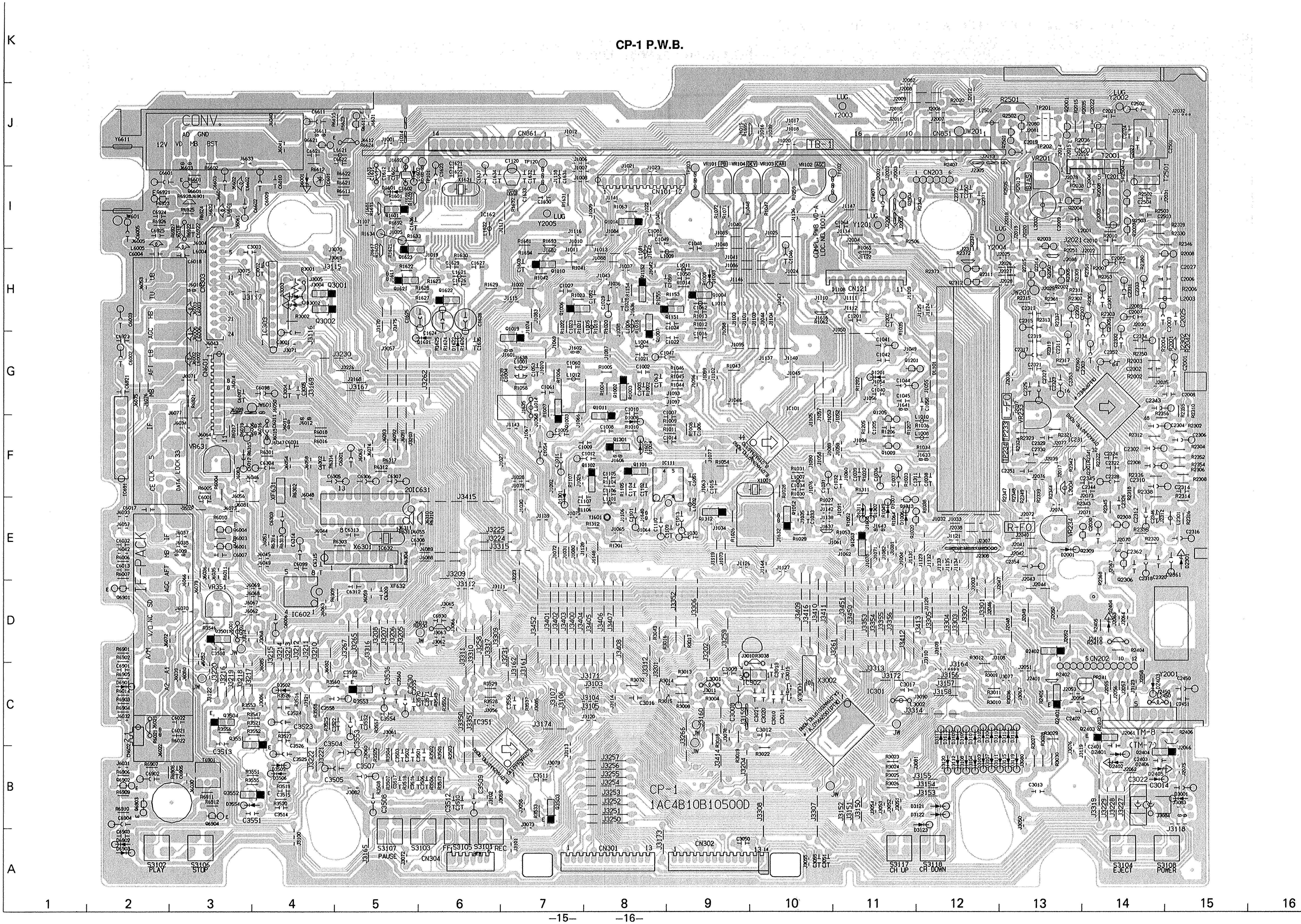
B

A

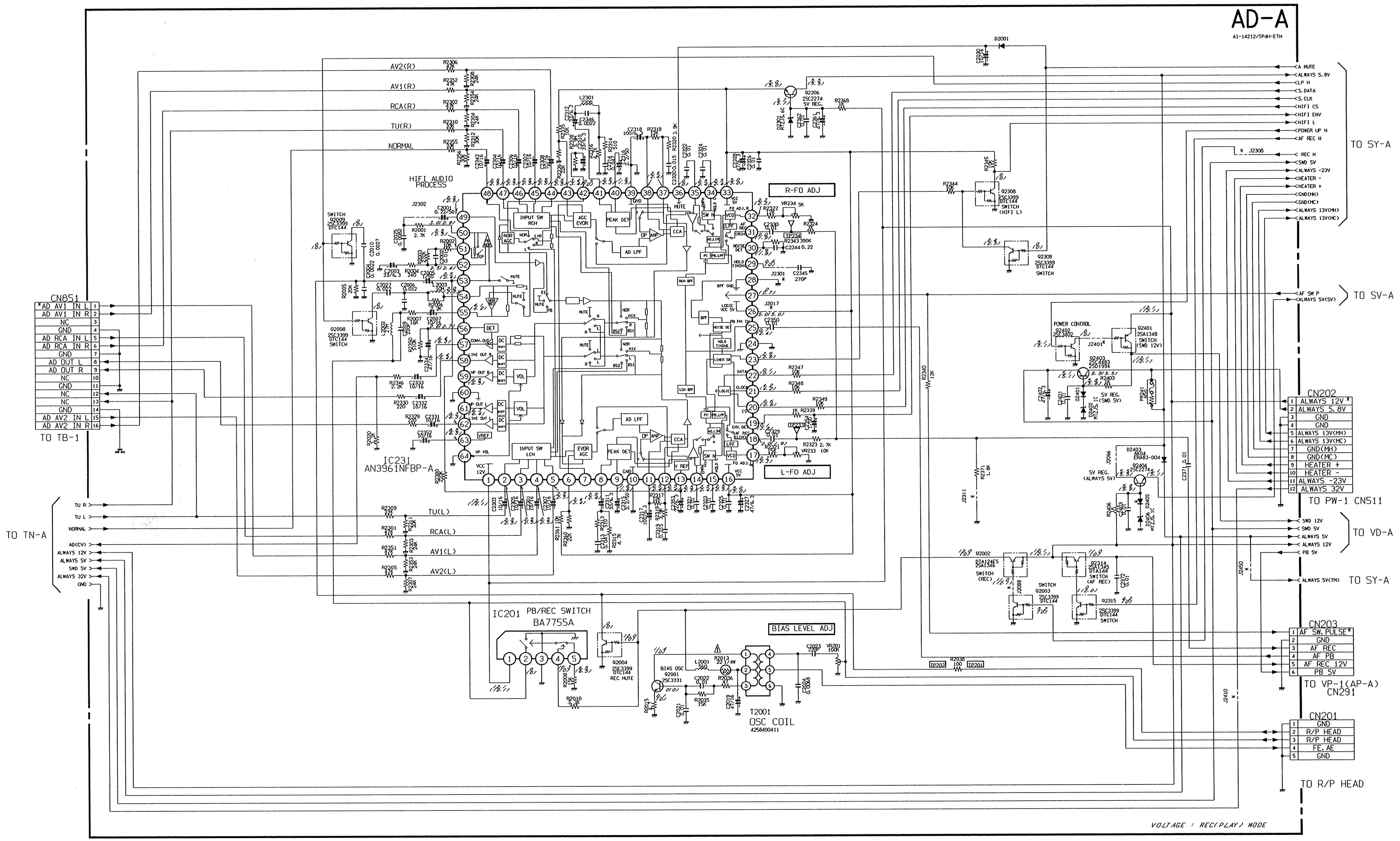


T5001
1AC4B10B10400C
PW-1
F5001
T2.5A H 250V
R5114
R5113
C5106
R5121
D5103
D5104
R5120
C5107
CN511
R5119
D5114
D5113
R5118
D5105
D5109
C5108
L5101
C5102
C5101
R5112
D5101
J5110
C5104
D5110
J5102
J5103
D5106
C5109
C5112
C5105
R5103
D5102
J5112
R5130
C5111
IC512
R5109
R5106
L5102
R5105
C5110
J5101
IC511
R5107
R5108
D5011
R5104
C5004
R5010
Q5001
C5015
D5003
C5010
R5011
C5011
R5016
R5017
R5014
C5014
R5020
R5015
D5001
R5021
R5019
D5009
J5010
D5012
D5007
D5004
R5022
R5012
C5016
J5011
D5005
R5024
Q5002
R5023
C5017
Q5003
C5013
R5025
T5012
D5008
D5006
C5001
C5002
R5001
Y5101
Y5102
J5001
L5001
J5002
L5002
C5003
CN501

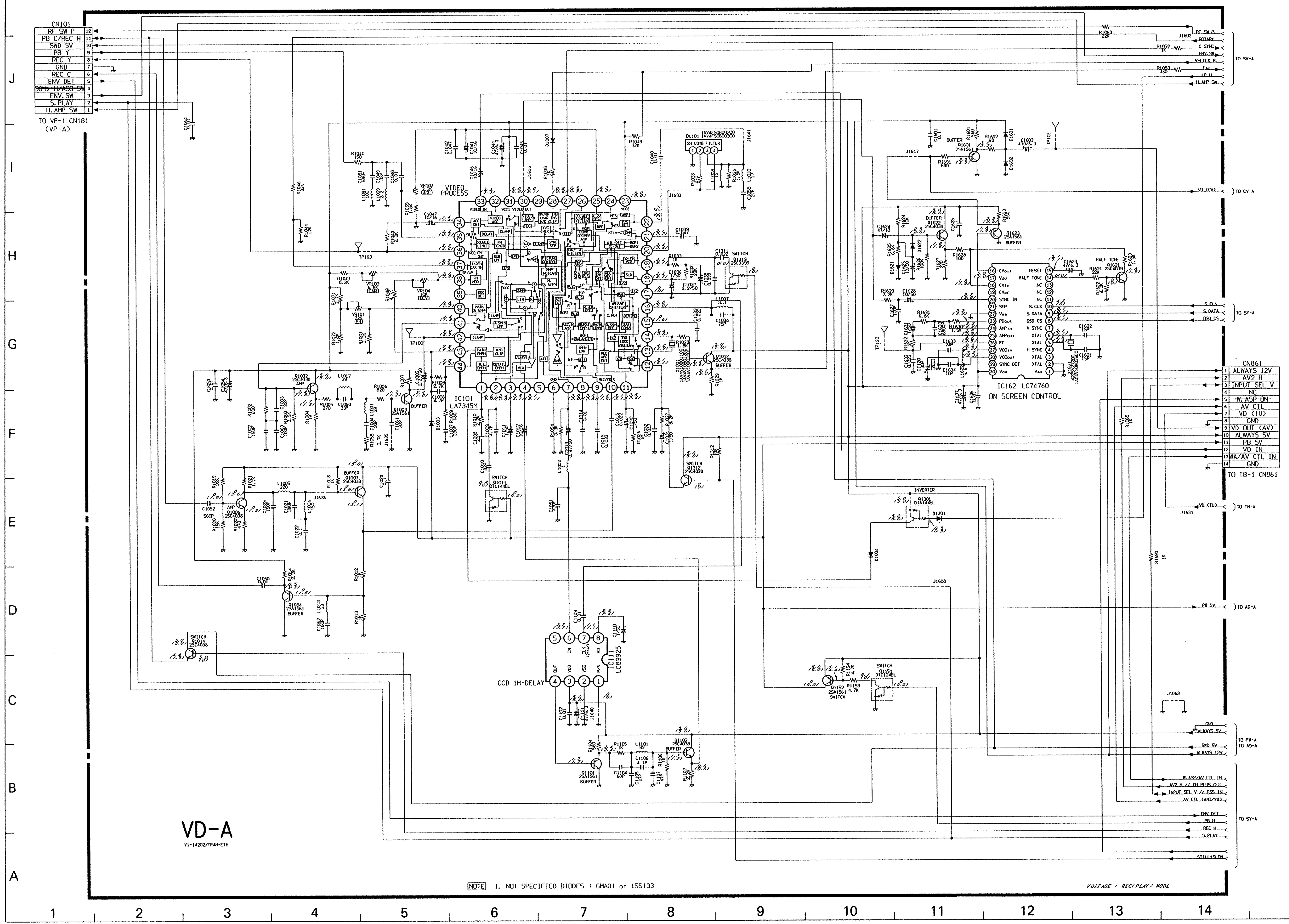
CP-1 P.W.B.


K
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
CONV.
12V
VD
AD
GND
MB
BST
IF-PACK
CN861
CN851
CN101
CN121
CN203
CN202
CN301
CN302
CN304
TB-1
IC101
IC111
IC301
IC302
IC351
IC602
IC632
LUG
CP-1
1AC4B10B10500D
R-FO
L-FO
S3102 PLAY
S3106 STOP
S3107 PAUSE
S3103
S3105 FF
S3101 REC
S3117 CH UP
S3118 CH DOWN
S3104 EJECT
S3108 POWER
TM-8
TM-7

CP-1 BOARD (AD-A) AUDIO

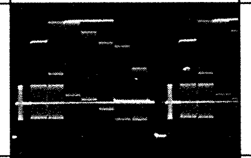
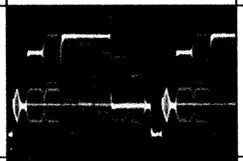
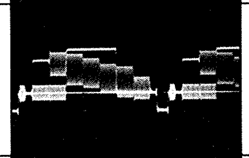
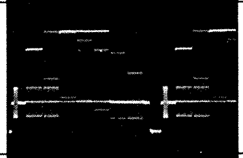
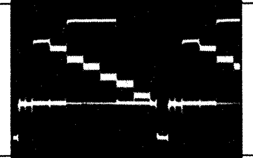
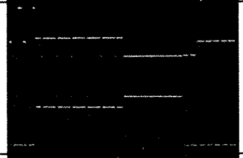
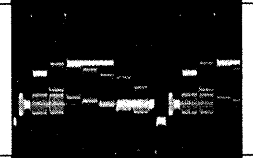
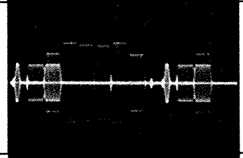
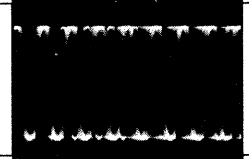
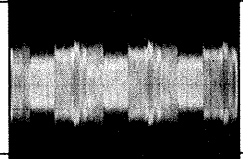
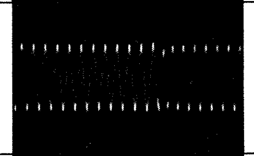
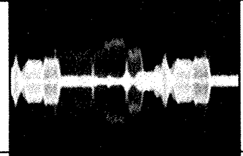
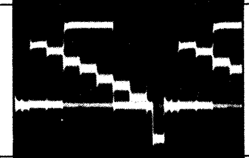
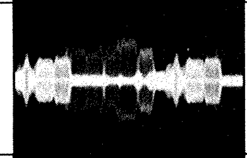
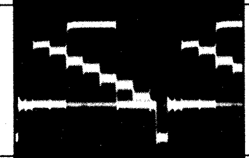
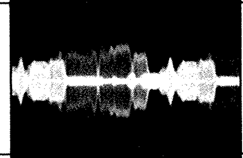
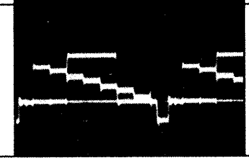
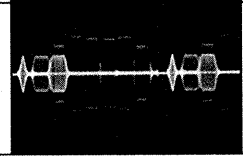

AD-A
HIFI AUDIO PROCESS
IC231
AN3961NFBP-A
R-FO ADJ
L-FO ADJ
IC201 PB/REC SWITCH
BA7755A
BIAS LEVEL ADJ
T2001
OSC COIL
Q2001 2SC3331 BIAS OSC
Q2004 2SC3399 DTC144 REC MUTE
Q2306 2SC2274 5V REG.
Q2308 2SC3399 DTC144 SWITCH (HIFI L)
Q2309 2SC3399 DTC144 SWITCH
POWER CONTROL
Q2401 2SA1348 SWITCH (SWD 12V)
Q2403 2SD1994
5V REG. (SWD 5V)
Q2404 2SC2274 5V REG. (ALWAYS 5V)
Q2002 DTA124ES 2SA1346 SWITCH (REC)
Q2003 2SC3399 DTC144 SWITCH
Q2314 2SA1345 DTA144 SWITCH (AF REC)
Q2315 2SC3399 DTC144 SWITCH
Q2008 2SC3399 DTC144 SWITCH
Q2009 2SC3399 DTC144 SWITCH
CN851
AD AV1 IN L 1
AD AV1 IN R 2
NC 3
GND 4
AD RCA IN L 5
AD RCA IN R 6
GND 7
AD OUT L 8
AD OUT R 9
NC 10
GND 11
NC 12
NC 13
GND 14
AD AV2 IN L 15
AD AV2 IN R 16
TO TB-1
TO TN-A
TU R
TU L
NORMAL
AD(CV)
ALWAYS 12V
SWD 5V
ALWAYS 32V
GND
AV2(R)
AV1(R)
RCA(R)
TU(R)
NORMAL
TU(L)
RCA(L)
AV1(L)
AV2(L)
A MUTE
ALWAYS 5.8V
LP H
S.DATA
S.CLK
HIFI CS
HIFI ENV
HIFI L
POWER UP H
AF REC H
REC H
SWD 5V
ALWAYS -23V
HEATER -
HEATER +
GND(MH)
GND(MC)
ALWAYS 13V(MH)
ALWAYS 13V(MC)
TO SY-A
AF SW P
ALWAYS 5V(SV)
TO SV-A
CN202
1 ALWAYS 12V
2 ALWAYS 5.8V
3 GND
4 GND
5 ALWAYS 13V(MH)
6 ALWAYS 13V(MC)
7 GND(MH)
8 GND(MC)
9 HEATER +
10 HEATER -
11 ALWAYS -23V
12 ALWAYS 32V
TO PW-1 CN511
SWD 12V
SWD 5V
ALWAYS 5V
ALWAYS 12V
PB 5V
TO VD-A
ALWAYS 5V(TN)
TO SY-A
CN203
1 AF SW.PULSE
2 GND
3 AF REC
4 AF PB
5 AF REC 12V
6 PB 5V
TO VP-1(AP-A) CN291
CN201
1 GND
2 R/P HEAD
3 R/P HEAD
4 FE. AE
5 GND
TO R/P HEAD
VOLTAGE : REC(PLAY) MODE
K
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23

CP-1 BOARD (VD-A) VIDEO


CN101
RF SW P
PB C/REC H
SWD 5V
PB Y
REC Y
GND
REC C
ENV DET
50Hz H/A50 SW
ENV. SW
S.PLAY
H. AMP SW
TO VP-1 CN181 (VP-A)
TO SY-A
TO CV-A
VIDEO PROCESS
IC101 LA7345M
IC162 LC74760 ON SCREEN CONTROL
CN861
ALWAYS 12V
AV2 H
INPUT SEL V
NC
W.ASP ON
AV CTL
VD (TU)
GND
VD OUT (AV)
ALWAYS 5V
PB 5V
VD IN
WA/AV CTL IN
GND
TO TB-1 CN861
TO TN-A
TO AD-A
TO PW-A TO AD-A
INVERTER
CCD 1H-DELAY
IC111 LC89925
BUFFER
SWITCH
AMP
VD-A
NOTE 1. NOT SPECIFIED DIODES : GMA01 or 1SS133
VOLTAGE : REC(PLAY) MODE
K
J
I
H
G
F
E
D
C
B
A

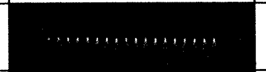
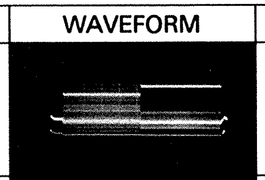
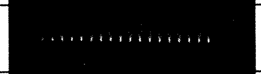
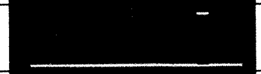
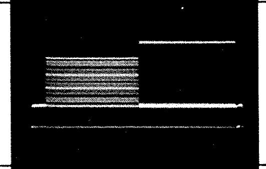
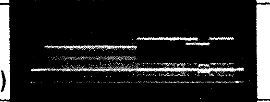
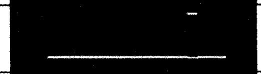
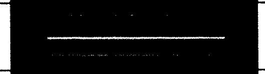
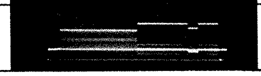
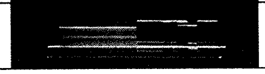
VIDEO CIRCUIT WAVEFORMS

WF-V-TP

TEST LOCATION	WAVEFORM	MODE/LEVEL	TEST LOCATION	WAVEFORM	MODE/LEVEL
IC101 Pin 33 (VIDEO IN)		REC, EE 1 Vp-p	IC101 Pin 30 (VIDEO OUT)		PB 2.5 Vp-p
IC101 Pin 41		REC, EE 0.6 Vp-p	IC101 Pin 30 (VIDEO OUT)		REC, EE 2 Vp-p
IC101 Pin 42		REC, EE 0.5 Vp-p	IC101 (UPPER) Pin 30 (LOWER) Pin 28		STILL (UPPER) 2 Vp-p (LOWER) 5 Vp-p
IC101 Pin 43		REC, EE 1.2 Vp-p	IC101 Pin 10 (REC CHROMA OUT)		REC, EE 0.4 Vp-p
IC101 Pin 36 (REC FM OUT)		REC, EE 1.0 Vp-p	Q1006 Base (PB CHROMA)		PB 0.3 Vp-p
IC101 Pin 35 (PB FM IN)		PB 0.3 Vp-p	Q1007 Emitter (PB CHROMA)		PB 0.2 Vp-p
IC101 Pin 41		PB 0.5 Vp-p	IC101 Pin 10 (PB CHROMA IN)		PB 0.2 Vp-p
IC101 Pin 42		PB 0.5 Vp-p	IC101 Pin 20		PB 1.0 Vp-p
IC101 Pin 7/4		PB 0.3 Vp-p	IC101 Pin 26		PB 0.6 Vp-p

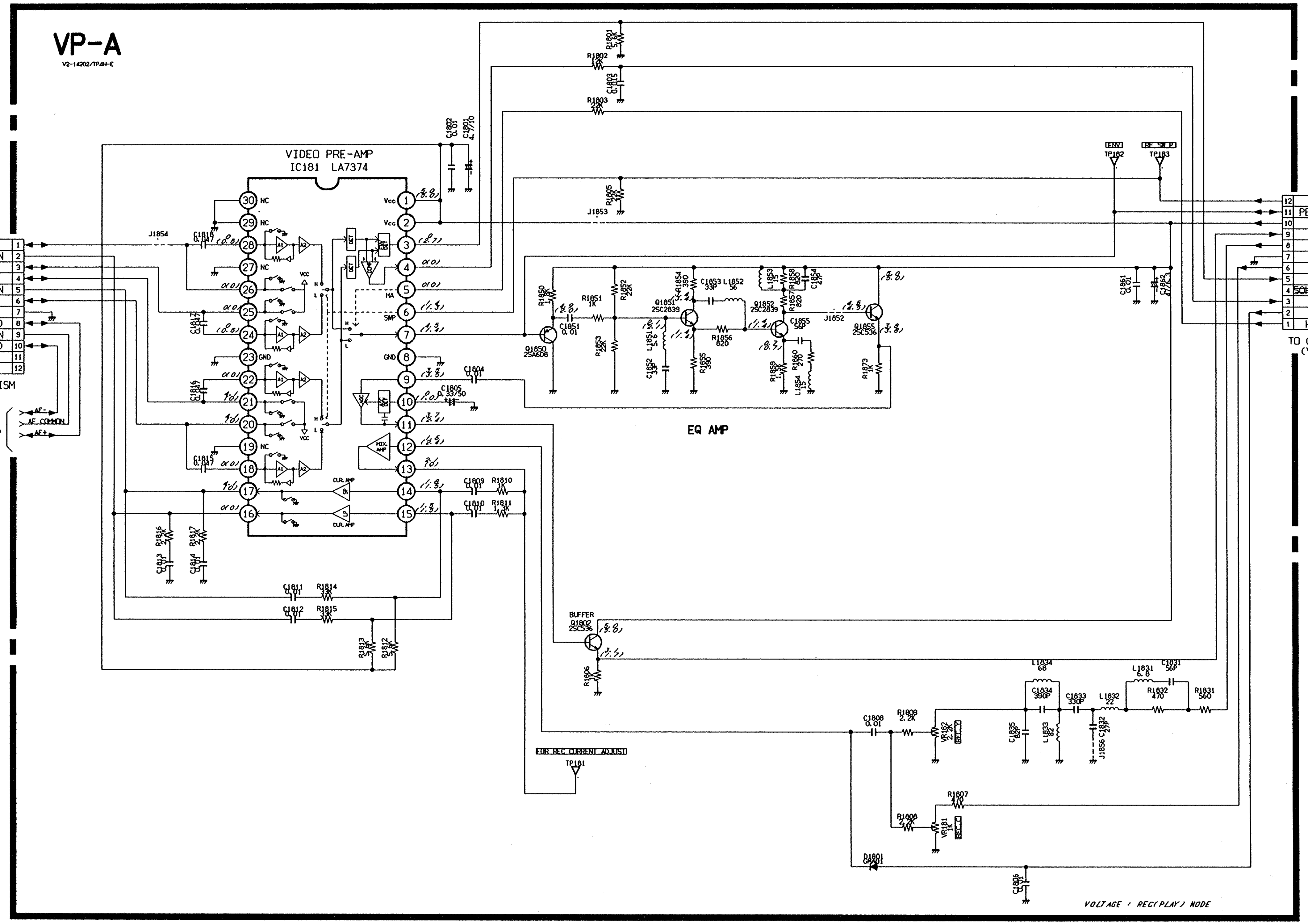
ON SCREEN (IC162) WAVEFORMS

(MODE: REC EE/ON SCREEN)

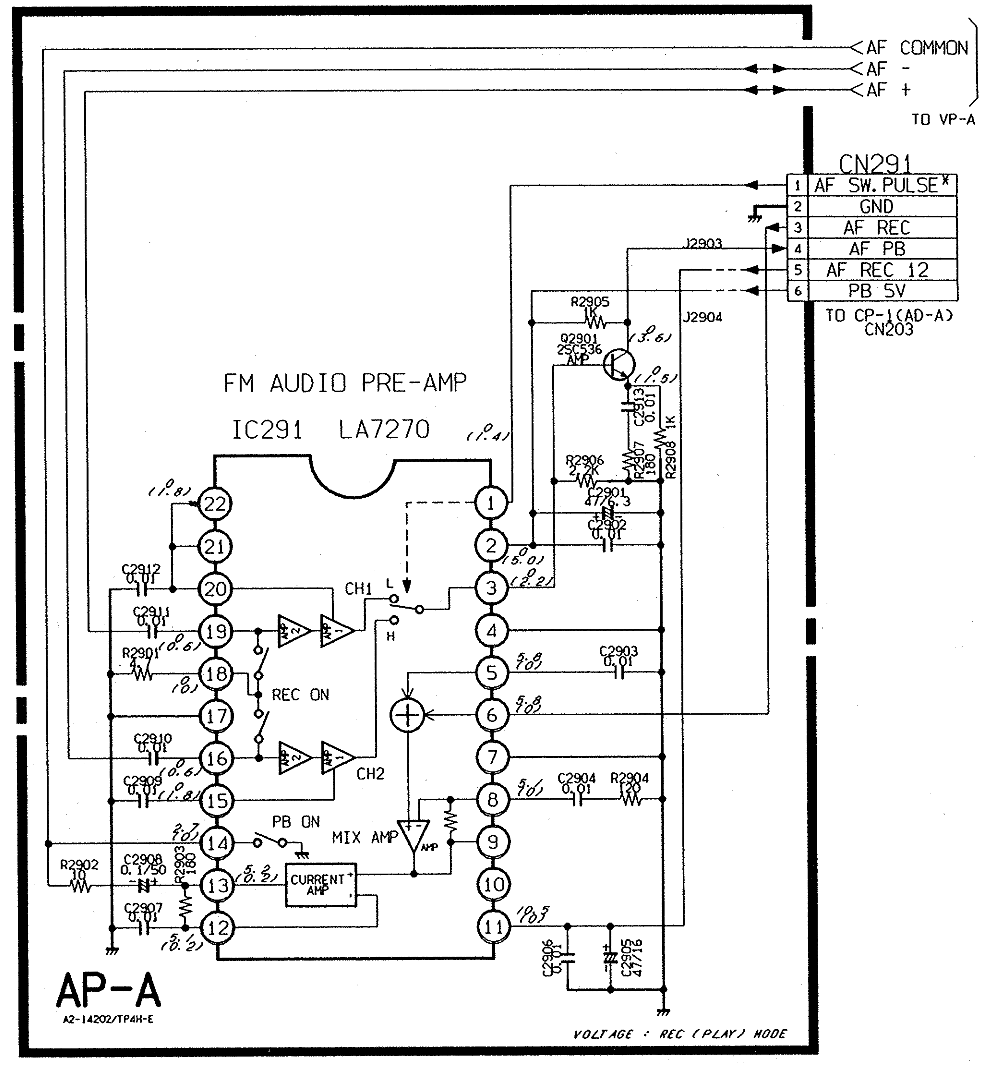
TEST LOCATION	WAVEFORM	LEVEL	TEST LOCATION	WAVEFORM	LEVEL
Pin 5 (17.7MHz X-TAL)		2Vp-p	Pin 19 (CV cr)		2Vp-p
Pin 6 (17.7MHz X-TAL)		3Vp-p			
Pin 14 (HALF TONE)		5Vp-p	Pin 20 (SYNC IN)		2Vp-p
Pin 16 (VIDEO OUT: WITH ON SCREEN)		2Vp-p			
Pin 14 (HALF TONE)		5Vp-p	Pin 23 (PD OUT)		4.5Vp-p
Pin 18 (VIDEO IN)		2Vp-p	Pin 16 (VIDEO OUT)		2Vp-p

WF-UFO-TP4

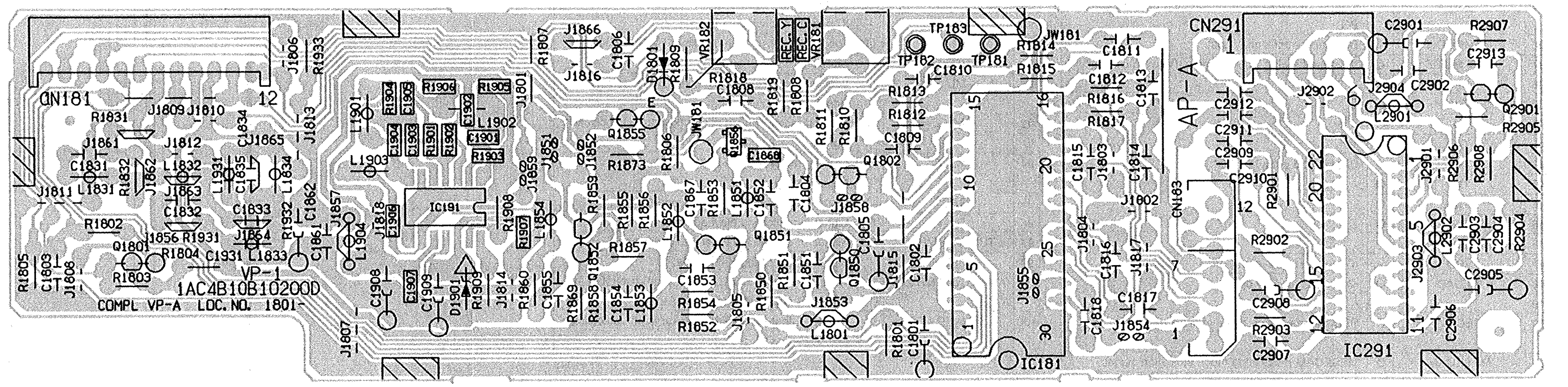
VP-1 BOARD (VP-A) VIDEO PRE-AMP


VP-A
V2-14202/TP4H-E
VIDEO PRE-AMP
IC181 LA7374
CN183
1 LP CH-1
2 LP COMMON
3 LP CH-2
4 SP CH-2
5 SP COMMON
6 SP CH-1
7 GND
8 AF+(CH-1)
9 AF COMMON
10 AF-(CH-2)
11 NC
12 NC
TO MECHANISM
TO AP-A
AF-
AF COMMON
AF+
CN181
12 RF SW P
11 PB C/REC H
10 SWD 5V
9 PB Y
8 REC Y
7 GND
6 REC C
5 ENV DET
4 50Hz H/ASO SW
3 ENV. SW
2 S.PLAY
1 H. AMP SW
TO CP-1 CN101 (VD-A)
ENV TP182
RF SW P TP183
EQ AMP
BUFFER
FOR REC CURRENT ADJUST
TP181
VOLTAGE : REC(PLAY) MODE

VP-1 BOARD (AP-A) AUDIO PRE-AMP


AF COMMON
AF -
AF +
TO VP-A
CN291
1 AF SW. PULSE
2 GND
3 AF REC
4 AF PB
5 AF REC 12
6 PB 5V
TO CP-1(AD-A) CN203
FM AUDIO PRE-AMP
IC291 LA7270
CH1
CH2
REC ON
PB ON
MIX AMP
CURRENT AMP
AP-A
A2-14202/TP4H-E
VOLTAGE : REC (PLAY) MODE

VP-1 P.W.B.

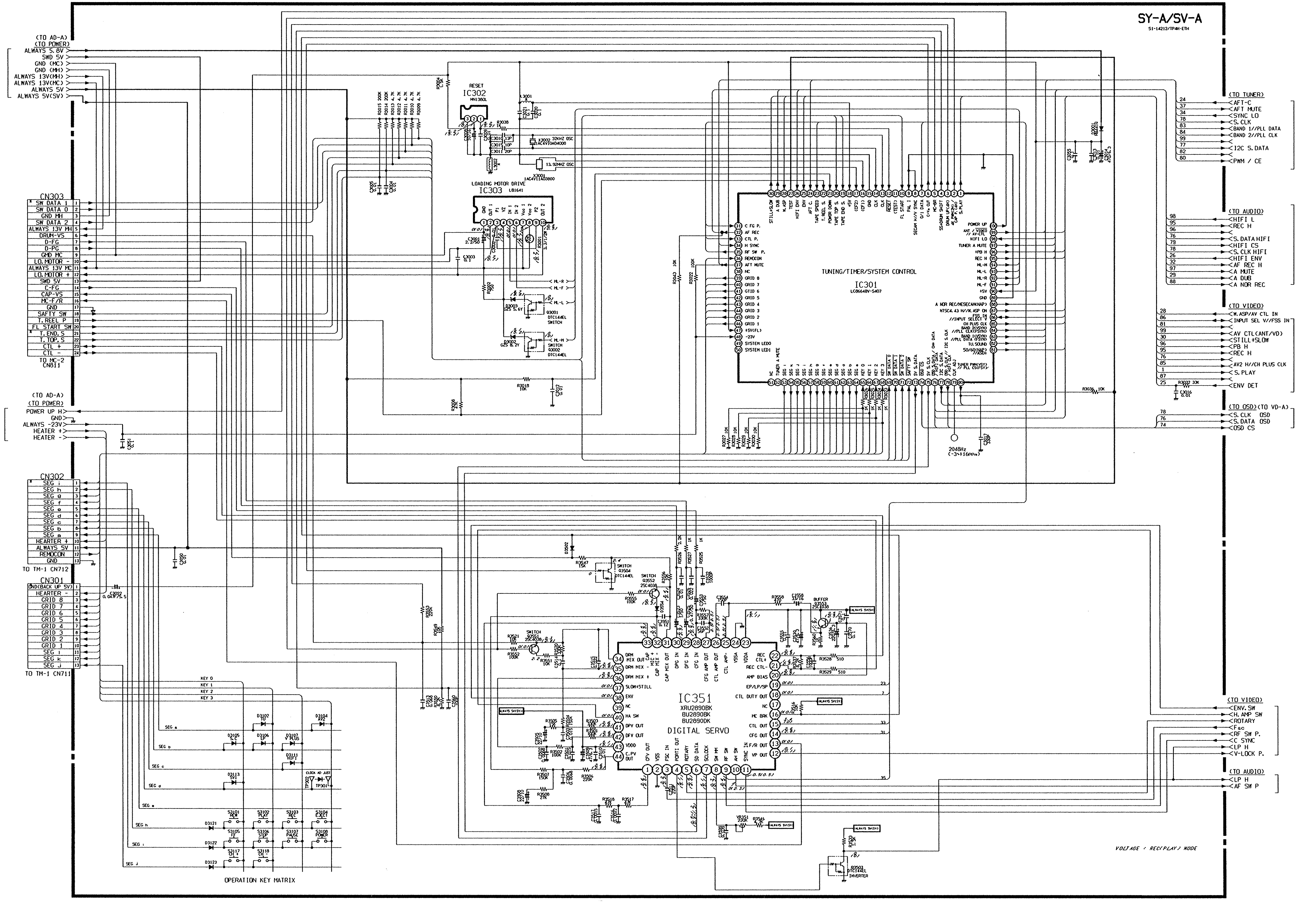

CN181
CN291
AP-A
VP-1
1AC4B10B10200D
COMPL VP-A LOC. NO. 1801-
IC181
IC191
IC291
TP181
TP182
TP183

IC301 SYSTEM CONTROL,TIMER, & TUNING CONTROL MPU PIN FUNCTIONS TABLE

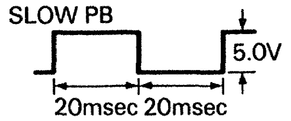
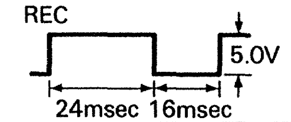
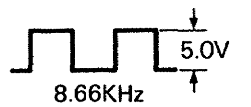
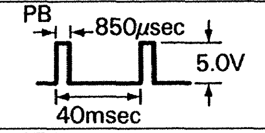
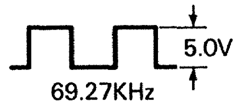
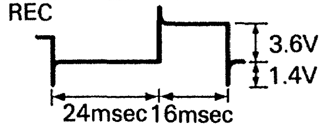
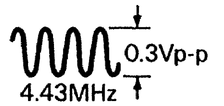
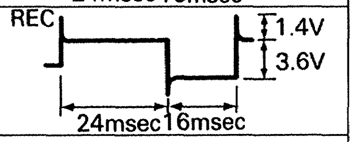
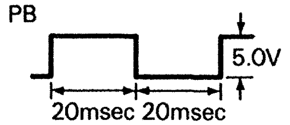
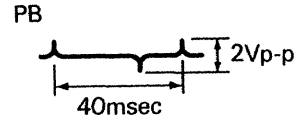
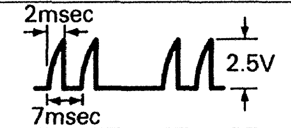
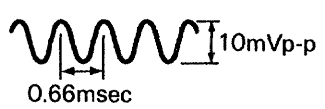
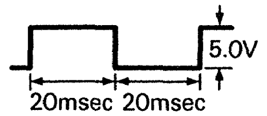
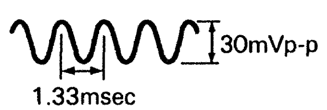
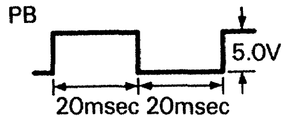
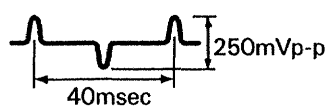
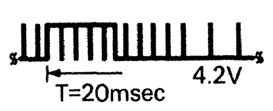
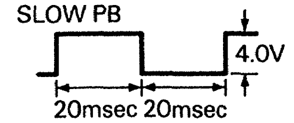
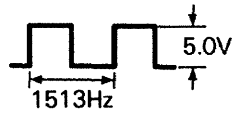
No.	Name	I/O	I/O Signal Function
1	S - PLAY	O	Signal for indicating CUE , REV , STILL and SLOW modes.
2	4k - PWM	O	Output 4kHz PWM signal for set period at start of high-speed FF / REW. (For 2 Haed model)
	CAP P.	O	Gain down control for Head Motor Amplifier at SLOW mode. (For 4 Head model)
3	DRUM UP	O	Head drum motor rotation speed - up signal.
4	SS + DRUM SHIFT	O	Signal for indicating SLOW/STILL modes and alternation of drum motor control data. (3 value voltage)
5	MC - BR	O	Brake signal for capstan motor.
6	C - Vs CUT	O	Cut off for capstan motor control voltage in SLOW / STILL modes.
7	0 / 1 DATA	I	CTL pulse duty detection signal input. Used for VISS detection.
8	V SYNC	I	V-sync input for TV system (50/60) discrimination.
9	PAL L	I	PAL-TV system indication signal input.
10	FL- START SW	I	Switch input indicating start of cassette loading or discharge by cassette mechanism.
11	-	-	-
12	RESET	I	Initial reset terminal for this IC.
13	CLK	-	Clock OSC during power failures.
14	CLK	-	Frequency is 32kHz.
15	VSS	-	Ground terminal
16	CF1	-	IC clock OSC terminal.
17	CF2	-	Frequency is 13.92MHz.
18	VDD	-	IC power supply terminal.(5Vdc)
19	T. END S.	I	Sensor signal input for tape end detection.
20	T. TOP S.	I	Sensor signal input for tape beginning detection.
21	POWER DOWN	I	Power failure detection terminal.
22	T. REEL S.	I	Pulse input for detection of take-up reel table rotation.
23	TAPE SPEED	I	Input of result of tape speed discrimination by digital servo IC.
24	AFT- C	I	Tuner AFT s-curve signal input for tuner AFT function.
25	ENV.	I	Video head envelope detection signal input for ATR function.
26	Hi-Fi ENV.	I	Audio head envelope detection signal for ATR .
27	-	-	-
28	WIDE ASPECT IN	I	Wide aspect video system indication signal input.
29	A DUB	O	Signal for disable the full erase oscillation.
30	SLOW + STILL	O	SLOW or STILL modes indication signal.
31	C - FG P.	I	FG signal input of capstan motor.
32	AF REC	O	Signal for indicate the recording start of audio signal at insert mode.
33	CTL P.	I	CTL head recording / playback pulse signal input.
34	H SYNC (LEVEL)	I	Sync. detecton signal input for existing channel discrimination.
35	RF SW P.	I	Input of RF switching pulse created by head drum PG.
36	REMOCON	I	Remote control signal input.
37	AFT MUTE	O	"H" output during TU AFT mute. (V-syn model only)
38	-	-	-
39	G8	O	Display grid outputs (FLD).
40	G7	O	
41	G6	O	
42	G5	O	
43	G4	O	
44	G3	O	
45	G2	O	
46	G1	O	
47	VDD	-	IC power supply input.(5Vdc)
48	V LOAD	O	-23V input for FLD drive.
49	-	-	-
50	SECAM	O	SECAM processing mode indication signal.
51	-	-	-
52	MESECAM	O	MESECAM processing mode indication signal.
53	SEG l	O	Display segment outputs (FLD). (Includes key-scan output)
54	SEG k	O	
55	SEG j	O	
56	SEG i	O	
57	SEG h	O	
58	SEG g	O	
59	SEG f	O	
60	SEG e	O	
61	SEG d	O	
62	SEG c	O	
63	SEG b	O	
64	SEG a	O	
65	KEY IN 0	I	Operation key data inputs.
66	KEY IN 1	I	
67	KEY IN 2	I	
68	KEY IN 3	I	
69	SW DATA 0	I	3-bit data indicating operation position of mechanism.
70	SW DATA 1	I	
71	SW DATA 2	I	
72	SAFETY SW	I	Terminal for accidental erasure prevention switch. No operation to recording mode while "LOW" is input.
73	SV S. DATA	O	Output 8-bit X 4 serial data giving operation mode and tracking data,etc., to digital servo IC.
74	OSD CS	O	Chip enable (access) signal output to OSD IC.
75	SV S CLK	O	The clock pulse for digital servo IC.
76	COMMON DATA	I/O	Terminal for communication of respective data with OSD IC, audio IC, and CH+ I/O selection IC.
77	I2C SDA	I/O	Data exchange with tuning data memory (I2C) IC.
78	COMMON CLK	O	The clock pulse for OSD IC, I2C IC, and audio IC.
79	CLK ADJ	-	1024 Hz signal for clock time adjustment.
80	PLL CS	O	Chip enable signal output to PLL tuning system IC. (F-syn model)
	PWM	O	Tuning voltage output (PWM signal). (V-syn model)
81	ASO +	O	Video picture quality selection signal.
82	TU SOUND	O	TV sound system (I/BG, I/DK etc.) indication.
83	PLL DATA	O	Data exchange with PLL tuning system IC.(For F-syn)
	BAND 1	O	Tuning band data output (BAND 1/BAND 2).
84	BAND 2	O	(L,L)=VHF-LOW (L,H)=VHF-HIGH (H,L)=UHF (H,H)=SKIP. (For V-syn. model)
	PLL CLK	O	The clock pulse for PLL tuning system IC.(For F-syn)
85	CH PLUS CLK	O	The clock pulse for CH+ input/output selection IC. (For CH + model only)
	AV 1 / AV 2	O	External input source (AV 1/2) selection signal.
86	INPUT SEL. V	O	Video input source (TU/AV) selection signal.
	FSS IN	I	CH + mode indication signal. (For CH + model only)
87	WIDE ASPECT ON	O	Video wide aspect system selection signal.
88	A NOR REC	O	Signal for indicate the full erase oscillation.
89	VSS	-	IC ground terminal.
90	VDD	-	IC power supply input.(5Vdc)
91	ML- F	O	Loading motor rotation direction (FWD) indication signal.
92	ML- R	O	Loading motor rotation direction (REV) indication signal.
93	ML- L	O	Loading motor rotation speed (low speed) indication signal.
94	ML- M	O	Loading motor rotation speed (medium speed) indication signal.
95	REC H	O	Signal for indicating recording mode.
96	PB H	O	Signal for indicating playback mode.
97	TUNER A MUTE	O	Signal for disable the tuner audio signal.
98	HIFI LO	I	Signal for indicating Hi-Fi mode.
99	AV CTL or ANT/VTR	O	AV terminal (pin8 of 21pin AV socket) control or the ANT/VTR selection signal terminal.
100	POWER UP	O	"HIGH" output except when power is off. Indicating that power is ON.

TP4H_TTS

CP-1 BOARD (SY-A,SV-A) SYSTEM CONTROL & SERVO

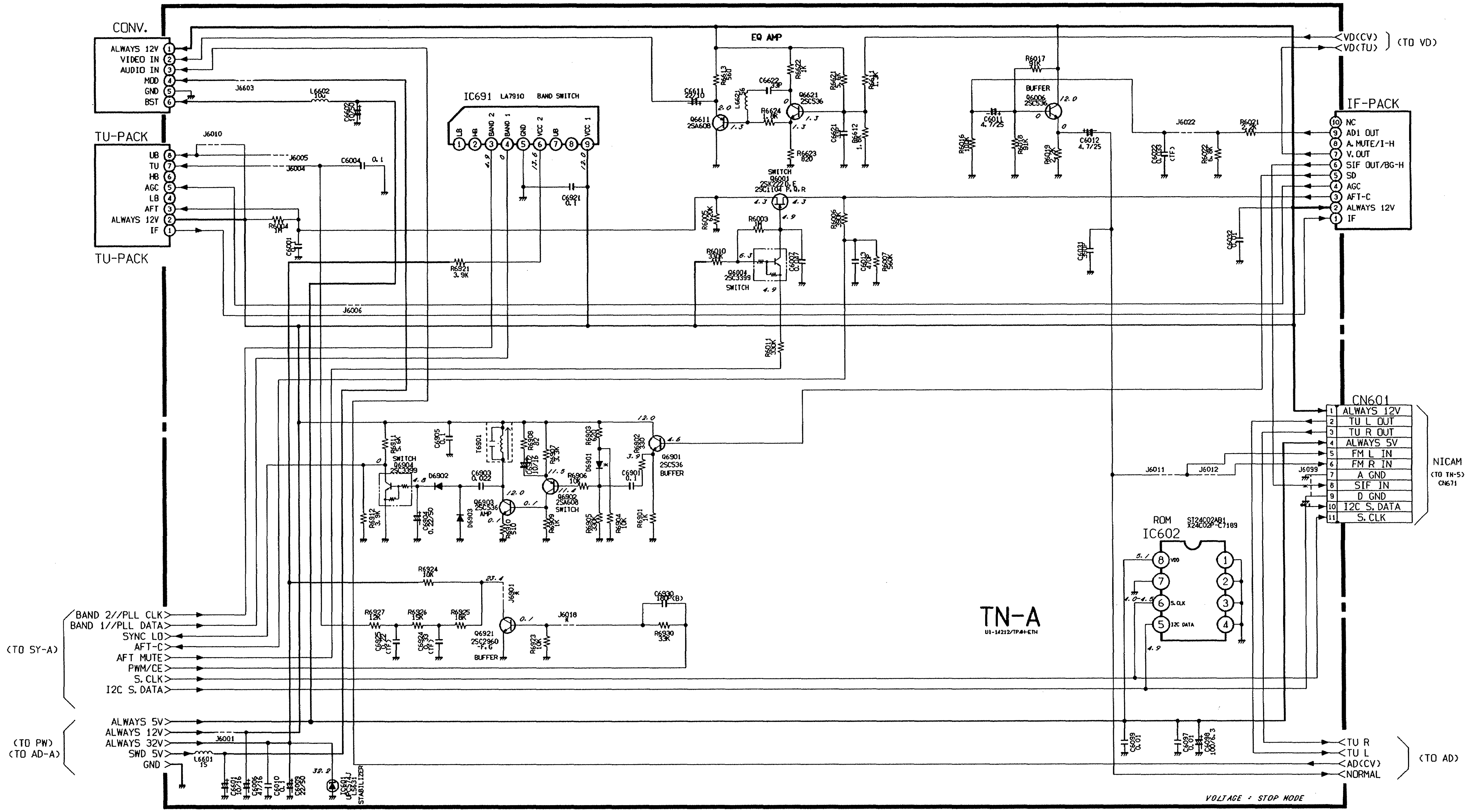


SERVO CIRCUIT WAVEFORMS (IC351:XRU2890 Series)

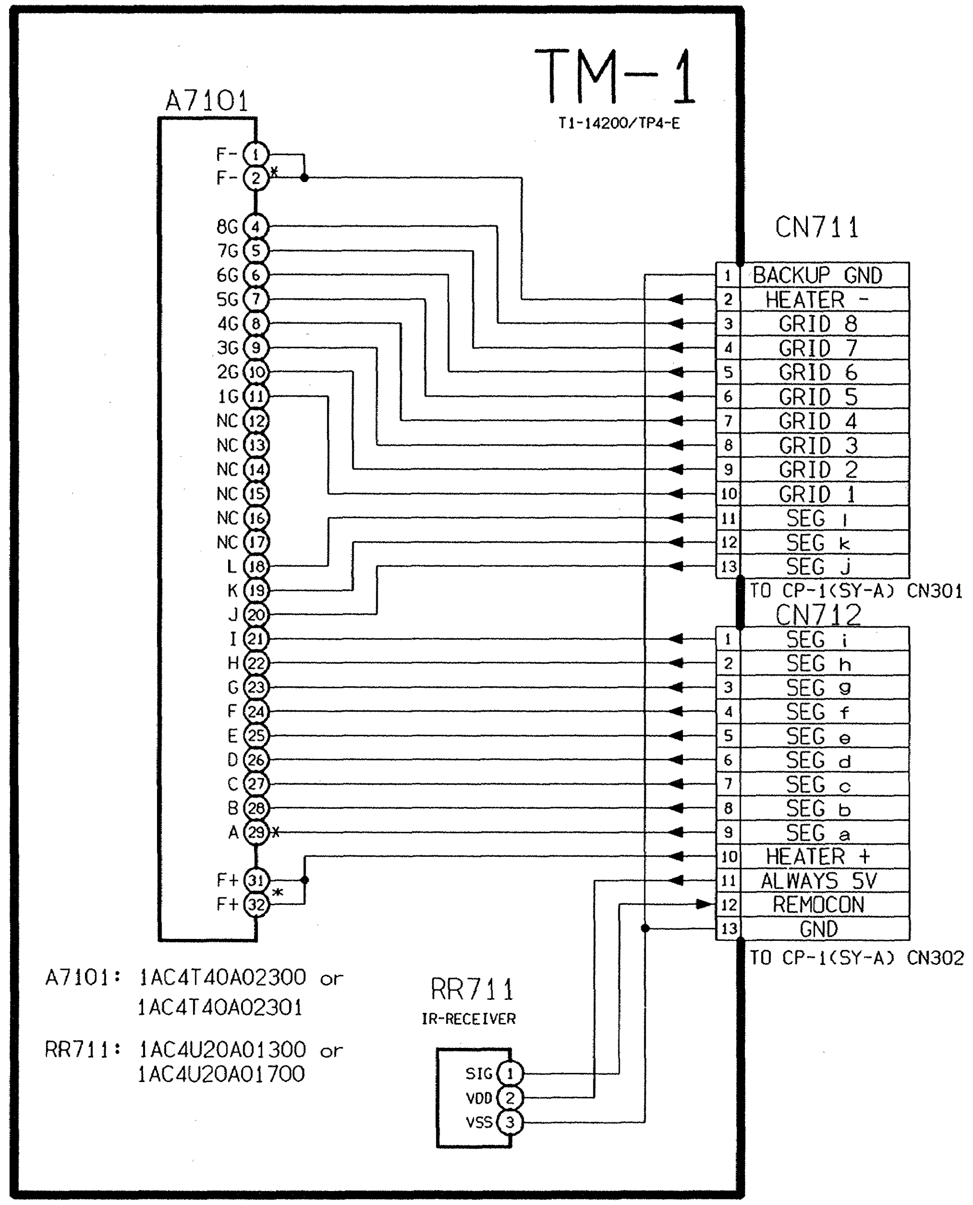
TEST LOCATION	WAVEFORM & MODE/LEVEL	TEST LOCATION	WAVEFORM & MODE/LEVEL
Pin 40 (H.A.SWITCHING)	 SLOW PB 5.0V 20msec 20msec	Pin 15 (CTL PULSE)	 REC 5.0V 24msec 16msec
Pin 42 (PWM)	 5.0V 8.66KHz	Pin 15 (CTL PULSE)	 PB 850μsec 5.0V 40msec
Pin 41, 44, 1 (PWM)	 5.0V 69.27KHz	Pin 21 (CTL HEAD–)	 REC 3.6V 1.4V 24msec16msec
Pin 3 (FSC INPUT)	 0.3Vp-p 4.43MHz	Pin 22 (CTL HEAD+)	 REC 1.4V 3.6V 24msec16msec
Pin 5 (ROTARY)	 PB 5.0V 20msec 20msec	Pin 26 (CTL AMP OUT)	 PB 2Vp-p 40msec
Pin 8 (D-PG MM)	 2msec 2.5V 7msec	Pin 28 (C-FG INPUT)	 10mVp-p 0.66msec
Pin 9 (RF SW PULSE)	 5.0V 20msec 20msec	Pin 29 (D-FG INPUT)	 30mVp-p 1.33msec
Pin 10 (AF SW PULSE)	 PB 5.0V 20msec 20msec	Pin 30 (D-PG INPUT)	 250mVp-p 40msec
Pin 11 (COMPOSITE SYNC INPUT)	 4.2V T=20msec	Pin 38 (ENV.SW INPUT)	 SLOW PB 4.0V 20msec 20msec
Pin 14 (C-FG PULSE)	 5.0V 1513Hz		

WF-S-TP4

CP-1 BOARD (TN-A,CV-A) TUNER, IF & RF CONVERTER CONNECTION


CONV.
ALWAYS 12V
VIDEO IN
AUDIO IN
MOD
GND
BST
TU-PACK
UB
TU
HB
AGC
LB
AFT
ALWAYS 12V
IF
TU-PACK
IC691 LA7910 BAND SWITCH
EQ AMP
BUFFER
Q6006 2SC536
IF-PACK
NC
AD1 OUT
A.MUTE/I-H
V.OUT
SIF OUT/BG-H
SD
AGC
AFT-C
ALWAYS 12V
IF
VD(CV)
VD(TU)
(TO VD)
SWITCH Q6904 2SC3399
Q6903 2SC536 AMP
Q6902 2SA608 SWITCH
Q6901 2SC536 BUFFER
Q6921 2SC2960 -F,G BUFFER
BAND 2//PLL CLK
BAND 1//PLL DATA
SYNC LO
AFT-C
AFT MUTE
PWM/CE
S.CLK
I2C S.DATA
(TO SY-A)
ALWAYS 5V
ALWAYS 12V
ALWAYS 32V
SWD 5V
GND
(TO PW)
(TO AD-A)
IC601 UPC574J LS631 STABILIZER
TN-A
U1-14212/TP4+ETH
ROM ST24C02AB1 X24C02P-C7189
IC602
VDD
S.CLK
I2C DATA
CN601
ALWAYS 12V
TU L OUT
TU R OUT
ALWAYS 5V
FM L IN
FM R IN
A GND
SIF IN
D GND
I2C S.DATA
S.CLK
NICAM
(TO TN-5)
CN671
TU R
TU L
AD(CV)
NORMAL
(TO AD)
VOLTAGE : STOP MODE

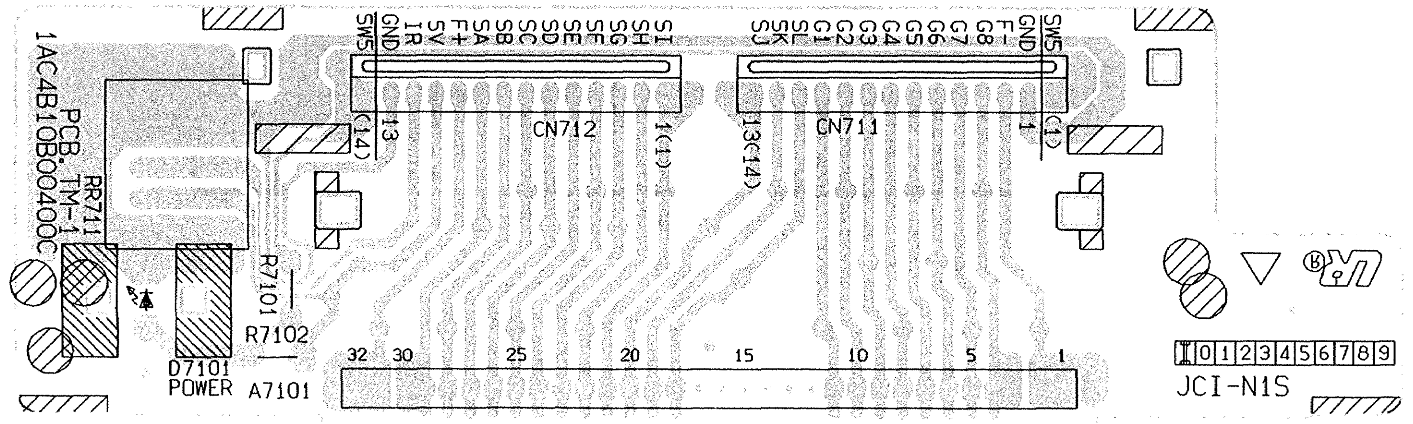
TM-1 BOARD DISPLAY (FLD)


TM-1
T1-14200/TP4-E
A7101
F- 1
F- 2
8G 4
7G 5
6G 6
5G 7
4G 8
3G 9
2G 10
1G 11
NC 12
NC 13
NC 14
NC 15
NC 16
NC 17
L 18
K 19
J 20
I 21
H 22
G 23
F 24
E 25
D 26
C 27
B 28
A 29
F+ 31
F+ 32
*
CN711
1 BACKUP GND
2 HEATER -
3 GRID 8
4 GRID 7
5 GRID 6
6 GRID 5
7 GRID 4
8 GRID 3
9 GRID 2
10 GRID 1
11 SEG l
12 SEG k
13 SEG j
TO CP-1(SY-A) CN301
CN712
1 SEG i
2 SEG h
3 SEG g
4 SEG f
5 SEG e
6 SEG d
7 SEG c
8 SEG b
9 SEG a
10 HEATER +
11 ALWAYS 5V
12 REMOCON
13 GND
TO CP-1(SY-A) CN302
RR711
IR-RECEIVER
SIG 1
VDD 2
VSS 3

A7101: 1AC4T40A02300 or
1AC4T40A02301

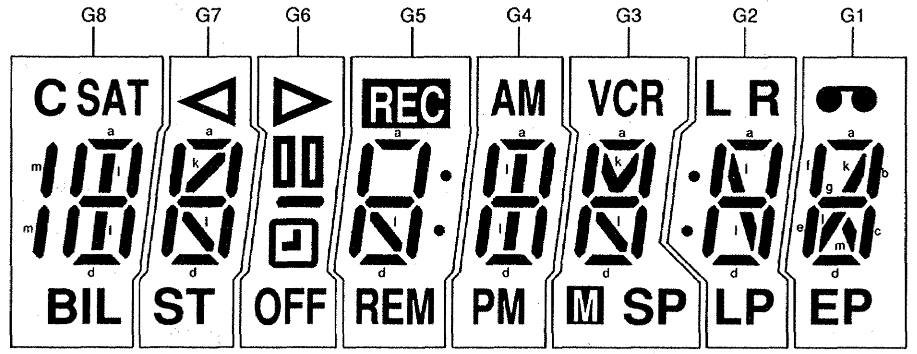
RR711: 1AC4U20A01300 or
1AC4U20A01700

TM-1 P.W.B.


SW5
GND
IR
5V
F+
SA
SB
SC
SD
SE
SF
SG
SH
SI
SJ
SK
SL
G1
G2
G3
G4
G5
G6
G7
G8
F-
GND
SW5
(14)
13
CN712
1(1)
13(14)
CN711
1
(1)
RR711
PCB. TM-1
1AC4B10B00400C
R7101
R7102
D7101
POWER
A7101
32
30
25
20
15
10
5
1
0 1 2 3 4 5 6 7 8 9
JCI-N1S

A7101 DISPLAY (FLD) GRID/ANODE ASSIGNMENT DRAWING & TABLE

GRID & SEGMENT ASSIGNMENT

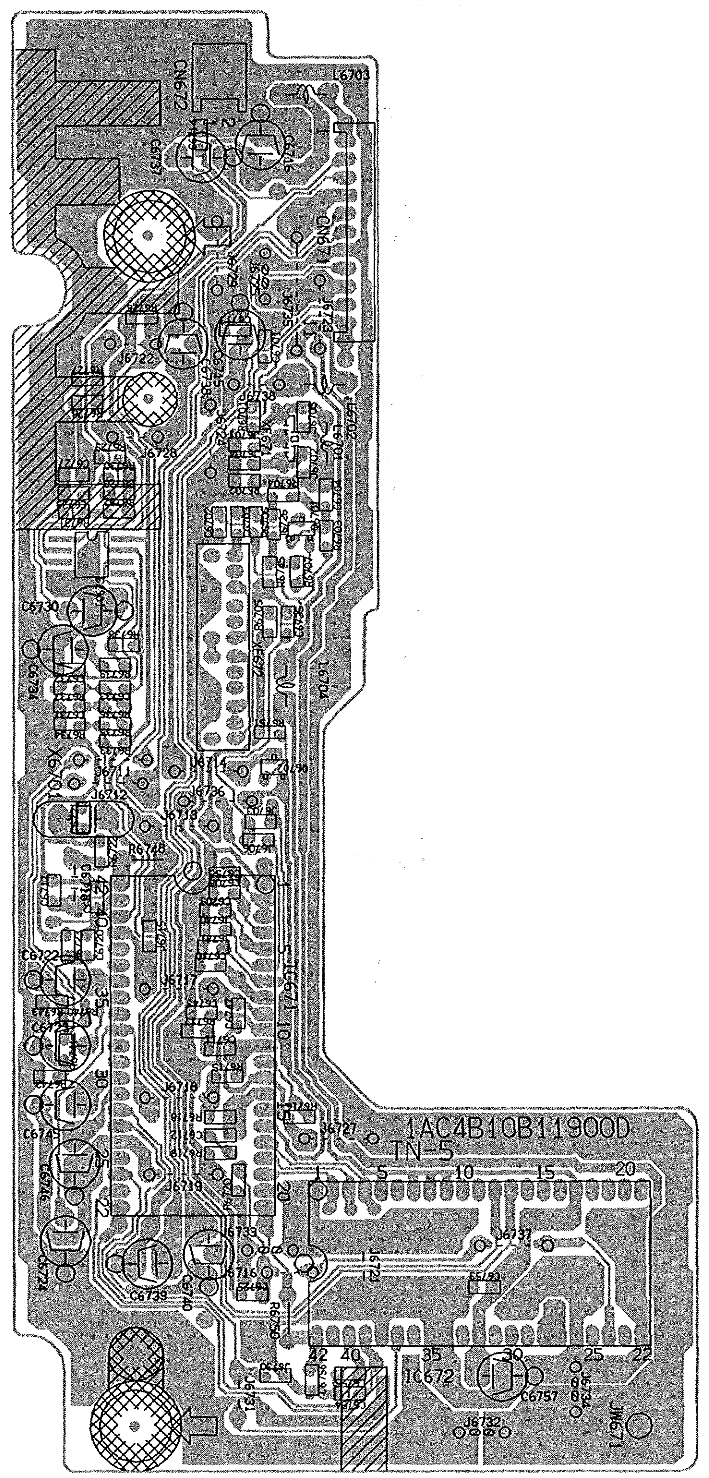

G8
G7
G6
G5
G4
G3
G2
G1
C SAT
REC
AM
VCR
L R
BIL
ST
OFF
REM
PM
M SP
LP
EP
a
b
c
d
e
f
g
h
i
j
k
l
m

ANODE CONNECTION

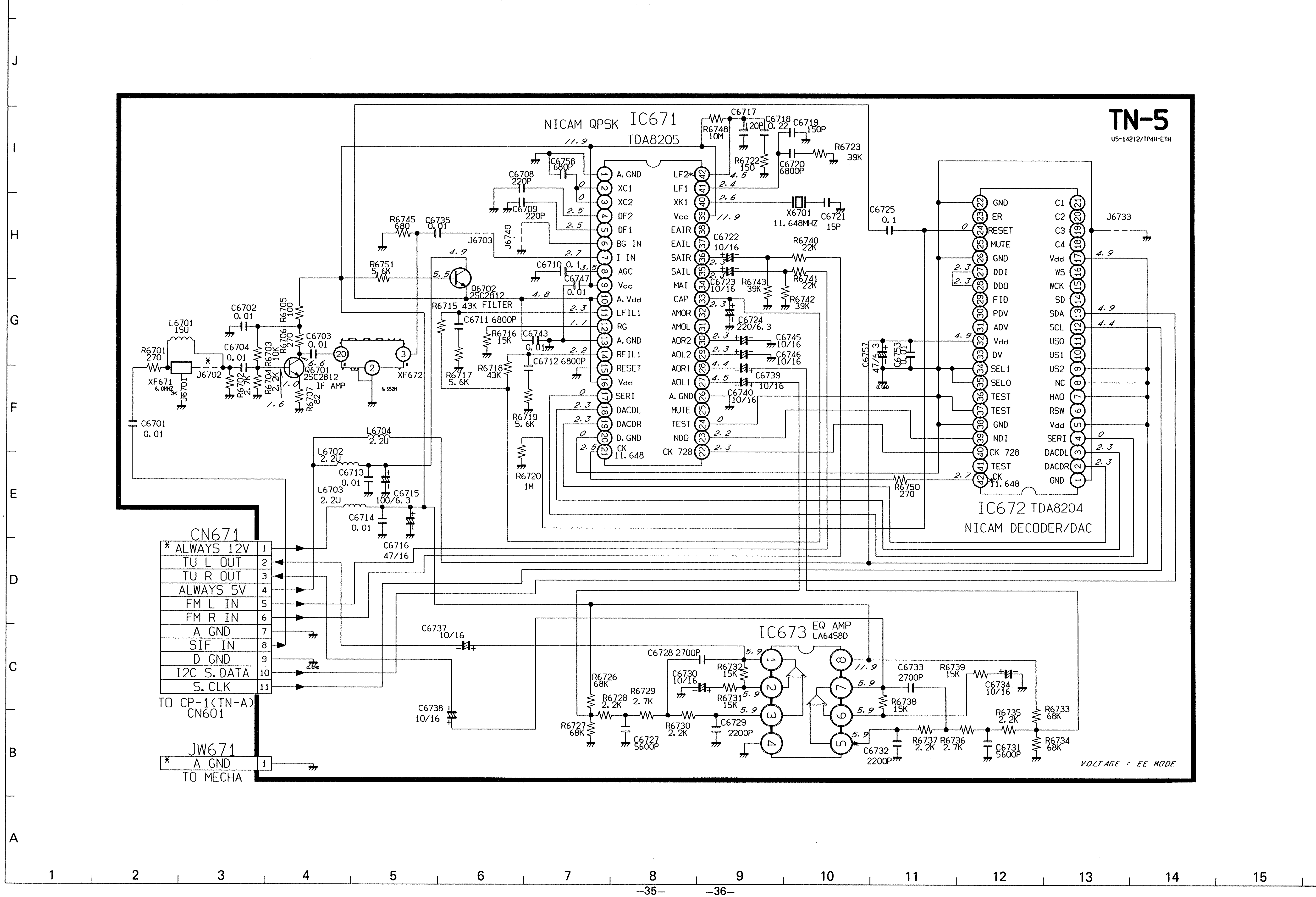
GRID / SEGMENT	G8	G7	G6	G5	G4	G3	G2	G1
a	C	◁	▷	REC	AM	VCR	L	●●
b	SAT	k	▮▮	—	—	k	R	k
c	a	a	▬	a	a	a	a	a
d	b	b	▣	b	b	b	b	b
e	c	c	—	c	c	c	c	c
f	d	d	—	d	d	d	d	d
g	e	e	—	e	e	e	e	e
h	f	f	—	f	f	f	f	f
i	g	g	—	g	g	g	g	g
j	l	l	—	l	l	l	l	l
k	m	—	—	:	—	M	:	m
l	BIL	ST	OFF	REM	PM	SP	LP	EP

GR-02300

TN-5 P.W.B.

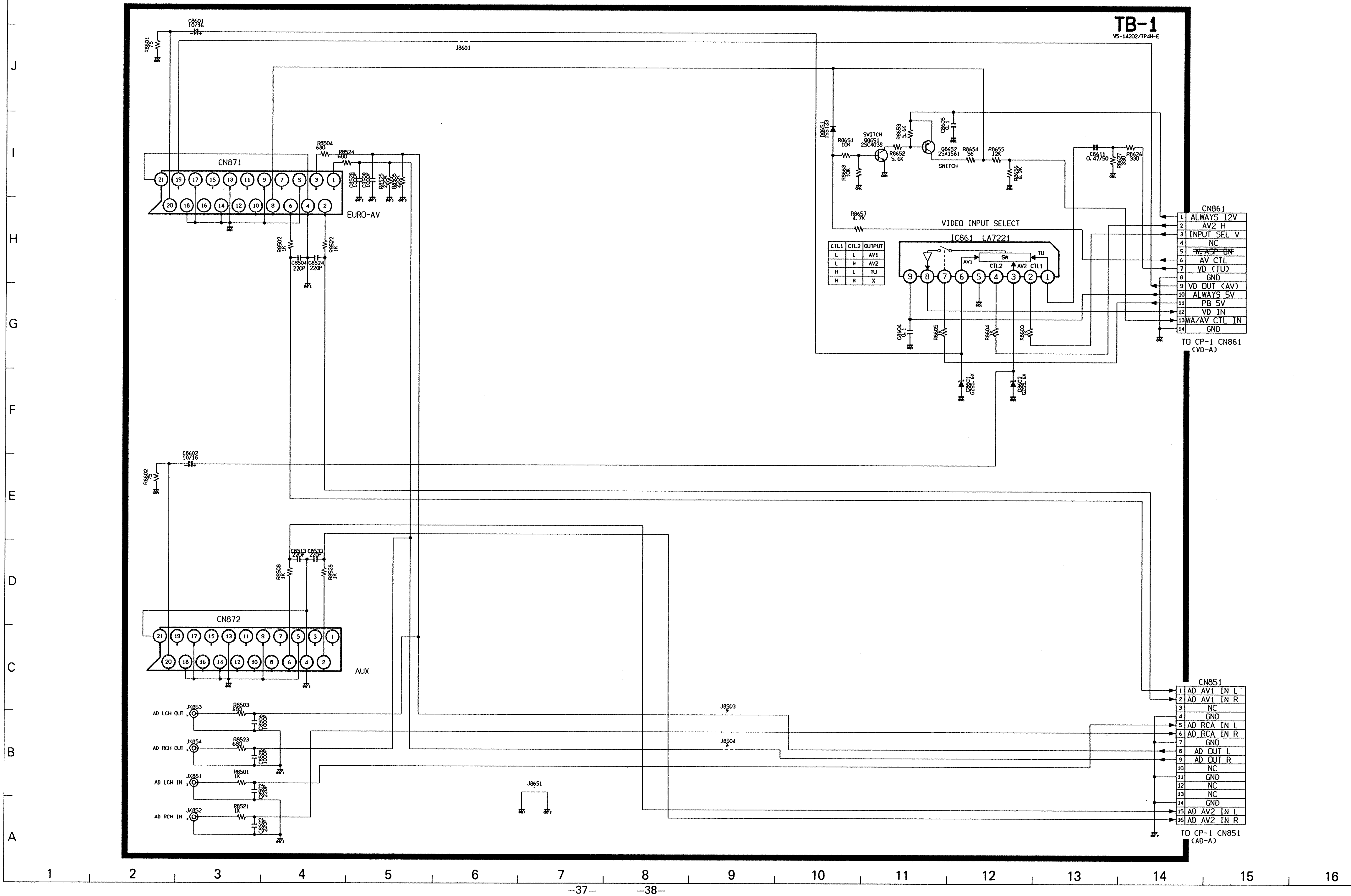

1AC4B10B11900D
TN-5
IC672
C6757
C6730
C6739
L6703
5
10
15
20
25
30
35
40
42

TN-5 BOARD NICAM

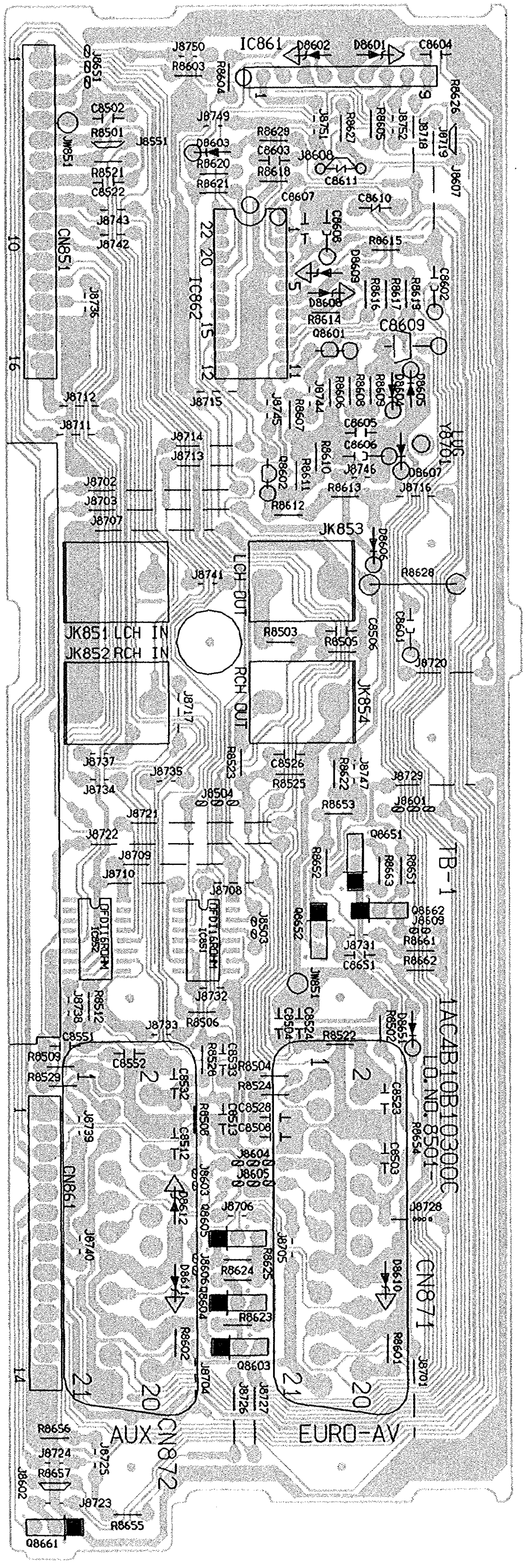


TN-5
U5-14212/TP4H-ETH
NICAM QPSK IC671
TDA8205
A.GND
XC1
XC2
DF2
DF1
BG IN
I IN
AGC
Vcc
A.Vdd
LFIL1
RG
A.GND
RFIL1
RESET
Vdd
SERI
DACDL
DACDR
D.GND
CK 11.648
LF2
LF1
XK1
Vcc
EAIR
EAIL
SAIR
SAIL
MAI
CAP
AMOR
AMOL
AOR2
AOL2
AOR1
AOL1
A.GND
MUTE
TEST
NDO
CK 728
IC672 TDA8204
NICAM DECODER/DAC
GND
ER
RESET
MUTE
GND
DDI
DDO
FID
PDV
ADV
Vdd
DV
SEL1
SELO
TEST
TEST
GND
NDI
CK 728
TEST
CK 11.648
C1
C2
C3
C4
Vdd
WS
WCK
SD
SDA
SCL
USO
US1
US2
NC
HAO
RSW
Vdd
SERI
DACDL
DACDR
GND
IC673 EQ AMP
LA6458D
CN671
ALWAYS 12V
TU L OUT
TU R OUT
ALWAYS 5V
FM L IN
FM R IN
A GND
SIF IN
D GND
I2C S.DATA
S.CLK
TO CP-1(TN-A) CN601
JW671
A GND
TO MECHA
Q6702 2SC2812
Q6701 2SC2812 IF AMP
XF672
XF671 6.0MHZ
X6701 11.648MHZ
R6715 43K FILTER
L6701 15U
L6702 2.2U
L6703 2.2U
L6704 2.2U
J6701
J6702
J6703
J6740
J6733
R6701 270
R6702 2.7K
R6703 10K
R6704 2.2K
R6705 100
R6706 270
R6707 82
R6716 15K
R6717 5.6K
R6718 43K
R6719 5.6K
R6720 1M
R6722 150
R6723 39K
R6726 68K
R6727 68K
R6728 2.2K
R6729 2.7K
R6730 2.2K
R6731 15K
R6732 15K
R6733 68K
R6734 68K
R6735 2.2K
R6736 2.7K
R6737 2.2K
R6738 15K
R6739 15K
R6740 22K
R6741 22K
R6742 39K
R6743 39K
R6745 680
R6748 10M
R6750 270
R6751 5.6K
C6701 0.01
C6702 0.01
C6703 0.01
C6704 0.01
C6708 220P
C6709 220P
C6710 0.1
C6711 6800P
C6712 6800P
C6713 0.01
C6714 0.01
C6715 100/6.3
C6716 47/16
C6717 120P
C6718 0.22
C6719 150P
C6720 6800P
C6721 15P
C6722 10/16
C6723 10/16
C6724 220/6.3
C6725 0.1
C6727 5600P
C6728 2700P
C6729 2200P
C6730 10/16
C6731 5600P
C6732 2200P
C6733 2700P
C6734 10/16
C6735 0.01
C6737 10/16
C6738 10/16
C6739 10/16
C6740 10/16
C6743 0.01
C6745 10/16
C6746 10/16
C6747 0.01
C6753 0.01
C6757 47/6.3
C6758 680P
VOLTAGE : EE MODE
K
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

TB-1 BOARD TERMINAL & INPUT SELECTION


TB-1
VS-14202/TP4H-E
K
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
C8601 10/16
R8601 75
J8601
CN871
EURO-AV
R8504 680
R8524 680
C8578 1000P
C8508 1000P
R8525 220K
R8505 220K
R8502 1K
R8522 1K
C8504 220P
C8524 220P
C8602 10/16
R8602 75
C8513 220P
C8533 220P
R8508 1K
R8528 1K
CN872
AUX
JK853
AD LCH OUT
R8503 680
C8506 1000P
JK854
AD RCH OUT
R8523 680
C8526 1000P
JK851
AD LCH IN
R8501 1K
C8502 220P
JK852
AD RCH IN
R8521 1K
C8522 220P
J8503
J8504
J8651
D8651 1SS133
R8651 10K
SWITCH
Q8651 2SC4038
R8663 10K
R8652 5.6K
R8653 5.6K
C8605 0.1
Q8652 2SA1561
SWITCH
R8654 56
R8655 12K
R8656 8.2K
C8611 0.47/50
R8627 330
R8626 330
R8657 4.7K
VIDEO INPUT SELECT
IC861 LA7221
CTL1 | CTL2 | OUTPUT
L | L | AV1
L | H | AV2
H | L | TU
H | H | X
SW
TU
AV1
CTL2
AV2
CTL1
C8604 0.1
R8605 1K
R8604 1K
R8603 1K
D8601 GZS5.6X
D8602 GZS5.6X
CN861
1 ALWAYS 12V
2 AV2 H
3 INPUT SEL V
4 NC
5 ~~W. ASP ON~~
6 AV CTL
7 VD (TU)
8 GND
9 VD OUT (AV)
10 ALWAYS 5V
11 PB 5V
12 VD IN
13 WA/AV CTL IN
14 GND
TO CP-1 CN861 (VD-A)
CN851
1 AD AV1 IN L
2 AD AV1 IN R
3 NC
4 GND
5 AD RCA IN L
6 AD RCA IN R
7 GND
8 AD OUT L
9 AD OUT R
10 NC
11 GND
12 NC
13 NC
14 GND
15 AD AV2 IN L
16 AD AV2 IN R
TO CP-1 CN851 (AD-A)

TB-1 P.W.B.


K
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
IC861
IC862
CN851
CN861
CN871
CN872
JK851 LCH IN
JK852 RCH IN
JK853
JK854
LCH OUT
RCH OUT
AUX
EURO-AV
TB-1
1AC4B10B10300C
LO.NO.8501
Y8701
LUG
IC851
IC852
Q8601
Q8602
Q8603
Q8604
Q8605
Q8651
Q8652
Q8661
Q8662
D8601
D8602
D8603
D8604
D8605
D8606
D8607
D8608
D8609
D8610
D8611
D8612
D8651
C8502
C8503
C8504
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C8508
C8512
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C8533
C8551
C8552
C8601
C8602
C8603
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C8608
C8609
C8610
C8611
C8651
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R8603
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R8653
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R8656
R8657
R8661
R8662
R8663
JW851
J8504
J8551
J8601
J8602
J8603
J8604
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J8741
J8742
J8743
J8744
J8745
J8746
J8747
J8749
J8750
J8751
J8752
1
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22
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14
2
21
20

Service Manual

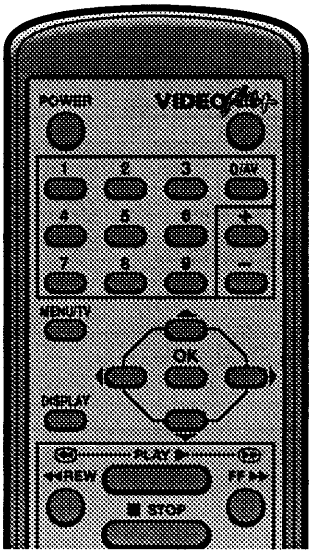
TEUKR Part No. TP30051

Part number for Mechanism
Service Information TP30036

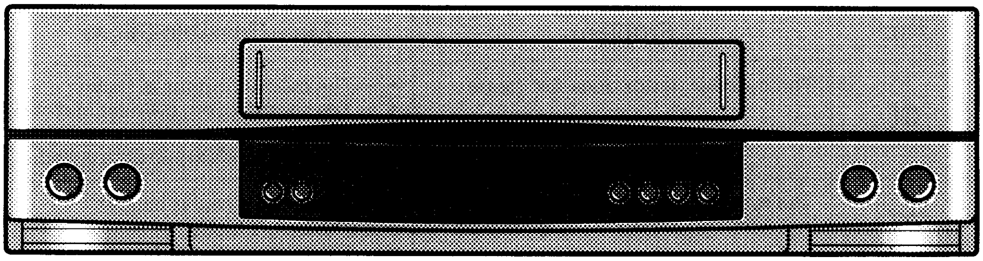
Video Cassette Recorder

THORN

VR204NVA



RCV8529



VHS
PAL

CONTENTS

SELF-DIAGNOSIS DISPLAY 2
1. DISASSEMBLY 3
2. ELECTRICAL ADJUSTMENT 6
3. TEST POINT FOR TAPE PATH ADJUSTMENT 14
4. PARTS LIST
   ACCESSORIES 15
   PACKING MATERIALS 15
   CABINET & CHASSIS PARTS 15
   MECHANISM PARTS 16
   ELECTRICAL PARTS 19
5. MECHANISM 29
CIRCUIT DIAGRAMS (Refer to the separate volume)

PRODUCT SAFETY NOTICE

The components designated by a symbol (⚠) in this schematic diagram designates components whose value are of special significance to product safety. Should any component designated by a symbol need to be replaced, use only the part designated in the Parts List. Do not deviate from the resistance, wattage, and voltage ratings shown.

NOTE: 1. Parts order must contain model number, part number, and description.
2. Substitute parts may be supplied as the service parts.
3. N.S.P.: Not available as service parts.

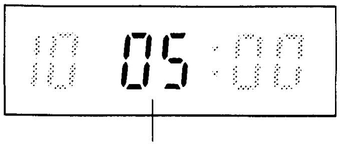
Design and specifications are subject to change without notice.

SELF-DIAGNOSIS DISPLAY

This unit displays the results of the self-diagnosis it carries out in two digits on the front panel indicator when problems occur. Although these digits will only roughly tell you what kind of problems have occurred, use them when servicing the unit.

1. Displaying the Self-Diagnosis Results

- Press the STOP button for about 10 seconds continuously. Two digits (see below) showing the results of the self-diagnosis will be displayed for three seconds at the hours part of the timer. All other parts of the timer will go off. The time will automatically return after the three seconds.
- If no mechanism unit problems have occurred up to now, "**00** " will be displayed.



Self-diagnosis digits

2. Self-Diagnosis Results

No.	Problem	Main Possible Cause	Mechanism Operations and State After Occurrence
01	The cylinder motor does not rotate.	• The cylinder motor is faulty. • The control of the cylinder motor is faulty. • The tape winds around the cylinder.	Shifts to the STOP mode.
02	The take-up reel does not rotate.	• The take-up reel is caught. • The belt is faulty. • The take-up torque has decreased.	Shifts to the STOP mode.
03	The capstan motor does not rotate.	• The capstan motor is faulty. • The control of the capstan motor is faulty.	Shifts to the STOP mode.
04	The tape cannot be loaded with the cassette inserted. (But unloading can be performed.)	• Error in the operations of the tape loading mechanism. • Foreign particles in the tape loading mechanism. • The tape end sensor is faulty. • The reel brake of the tape cassette has not been released.	Unloads, shifts to the INITIAL mode, and the power goes off.
05	Tape loading and unloading cannot be performed with the cassette inserted.	• The tape guide is caught. • The loading motor is faulty. • The control of the loading motor is faulty.	The power is forcibly turned off with the mechanism at its current position.
06	Front unloading cannot be performed when ejecting the cassette. (Front loading can be performed.)	• The cassette holder mechanism is faulty. • The front door is caught.	Front loads and shifts to the STOP or INITIAL mode. When the power switch is turned on before eject operations: Shifts to the STOP mode. When the power switch is turned off before eject operations: Shifts to the INITIAL mode and the power goes off.
07	Front loading and front unloading cannot be performed when ejecting the cassette.	• The tape cassette is caught in the cassette holder mechanism. • The gears of the front loading drive mechanism have not engaged properly.	The power is forcibly turned off with the mechanism at its current position.
08	The mechanism becomes 1 (BRAKE) while moving from 2 (STOP, FF/REW), 3(STILL), 4 (PLAY), and to 5 (IDLER).	• The mechanism mode switch contact is faulty.	The power is forcibly turned off with the mechanism at its current position.
09	The mechanism becomes 7 (INITIAL) while moving from 1 (BRAKE), 2 (STOP, FF/REW), 3(STILL), 4 (PLAY), and to 5 (IDLER).	• The mechanism mode switch contact is faulty.	Carries out tape take-up operations, shifts to the INITIAL mode, and the power goes off.

Note: For details of mechanism operations corresponding to the mechanism positions of the self-diagnosis numbers 08 and 09 above, refer to the separate volume on the mechanism manual. These manual reference numbers are shown in the cover.

1. DISASSEMBLY

1-1. REMOVAL OF CABINET, MECHANISM UNIT AND MAIN BOARD

REMOVING THE CABINET PARTS (Fig. 1.1.1)

1. Remove the cabinet and bottom cover by removing the four screws (A) and five screws (B).
2. Remove the front panel by removing the locks of the clamps (C) using a screwdriver, etc. and slightly rotating the bottom part in the direction of the arrow.

Notes:
- Electrical adjustments for the this model can be performed with only the cabinet removed.
- When replacing the bottom cover, do not tighten the screws (B) too much. Excess tightness may damage the screw taps on the chassis.

REMOVING THE MECHANISM MAIN UNIT (Fig. 1.1.2)

After removing the cabinet parts:

1. Remove the two screws (D), and then remove the bracket.
2. Remove a red screw (E), and then remove the AD-1 PWB by removing the locks of two clamps (F) of the holder. It is not necessary to remove the cables connected between the AD-1 PWB and CP-1 PWB assembly.
3. Disconnect 22-wire flat cable from the MC-2 PWB, and then 6-pin connector from the ACE heads.
4. Remove the flat cable from the cylinder assembly, then the two screws (G), and finally the VP-1 PWB assembly. It is not necessary to remove the two party cables connected between the VP-1 PWB assembly and CP-1 PWB assembly.
5. Remove the mechanism main unit by removing the two screws (H) and two screws (J).
   Remove, as well, the two screws (K) at the cassette tray side while pressing the tray lock lever as shown in the enlarged view and pushing the cassette tray to the position where the two screw (K) appear.

REMOVING THE CP-1 PWB ASSEMBLY (Fig. 1.1.3)

After removing the cabinet parts and mechanism unit:

1. Pull out the TM-1 PWB assembly while pressing and spreading out the four clamps (L) as shown by the arrows.
2. Remove the holder set to the opening of the chassis, while pressing the clamp in the direction of the arrow.
3. Remove two red screws (M) and a screw (N). Next, remove the CP-1 PWB assembly by lifting it straight up while pressing and spreading out the two clamps (O) as shown by the arrows.

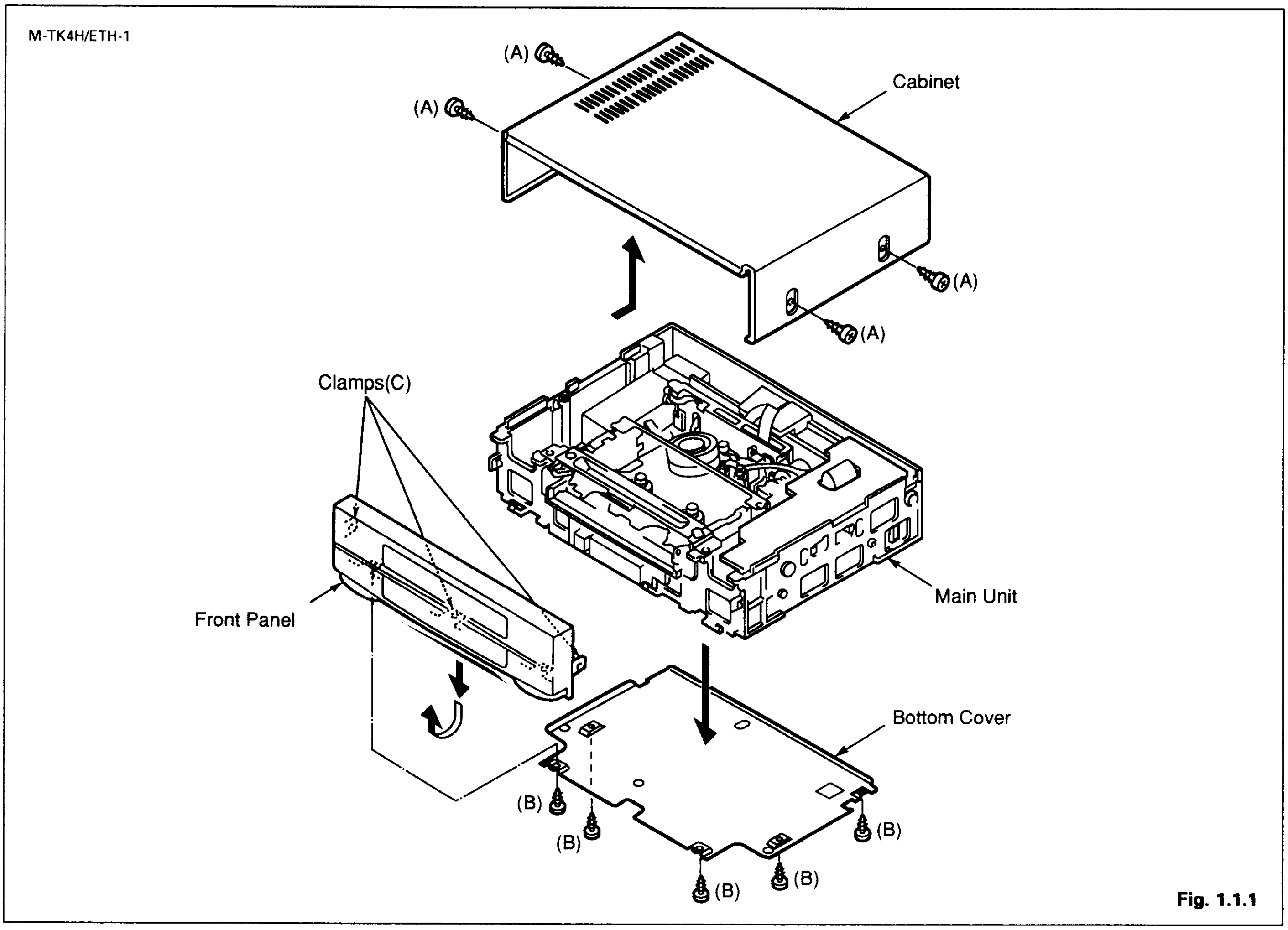


Fig. 1.1.1

M-TK4H/E-2

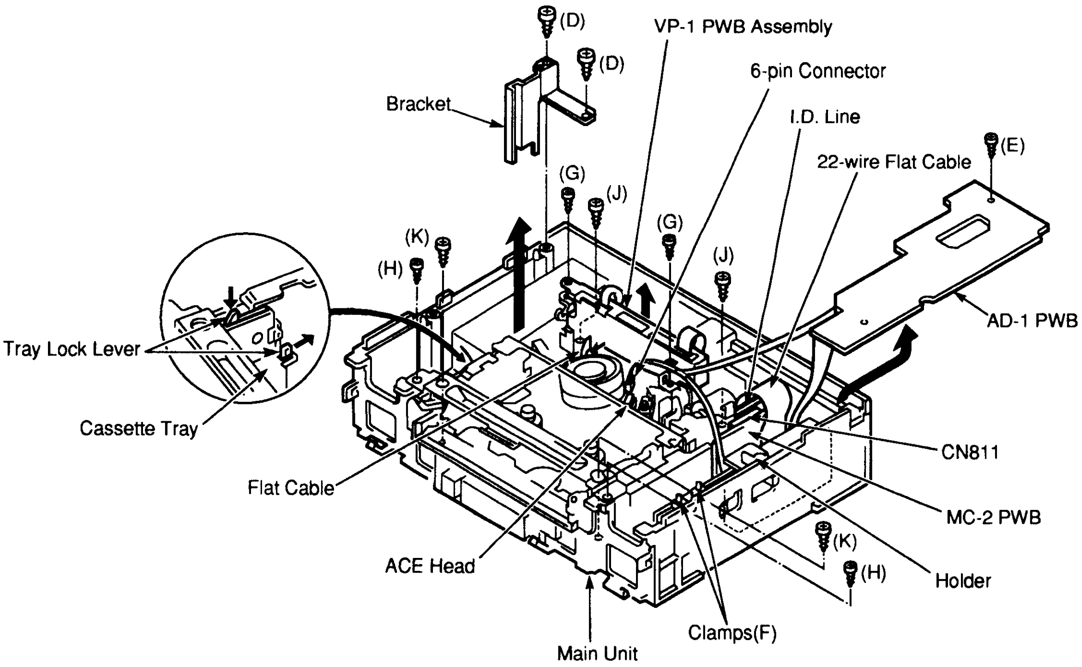

(D)
(D)
VP-1 PWB Assembly
6-pin Connector
Bracket
I.D. Line
(E)
22-wire Flat Cable
(G)
(J)
(K)
(G)
(H)
(J)
AD-1 PWB
Tray Lock Lever
Cassette Tray
CN811
Flat Cable
MC-2 PWB
(K)
ACE Head
(H)
Holder
Clamps(F)
Main Unit

Fig. 1.1.2

M-TK4H/ETH-3

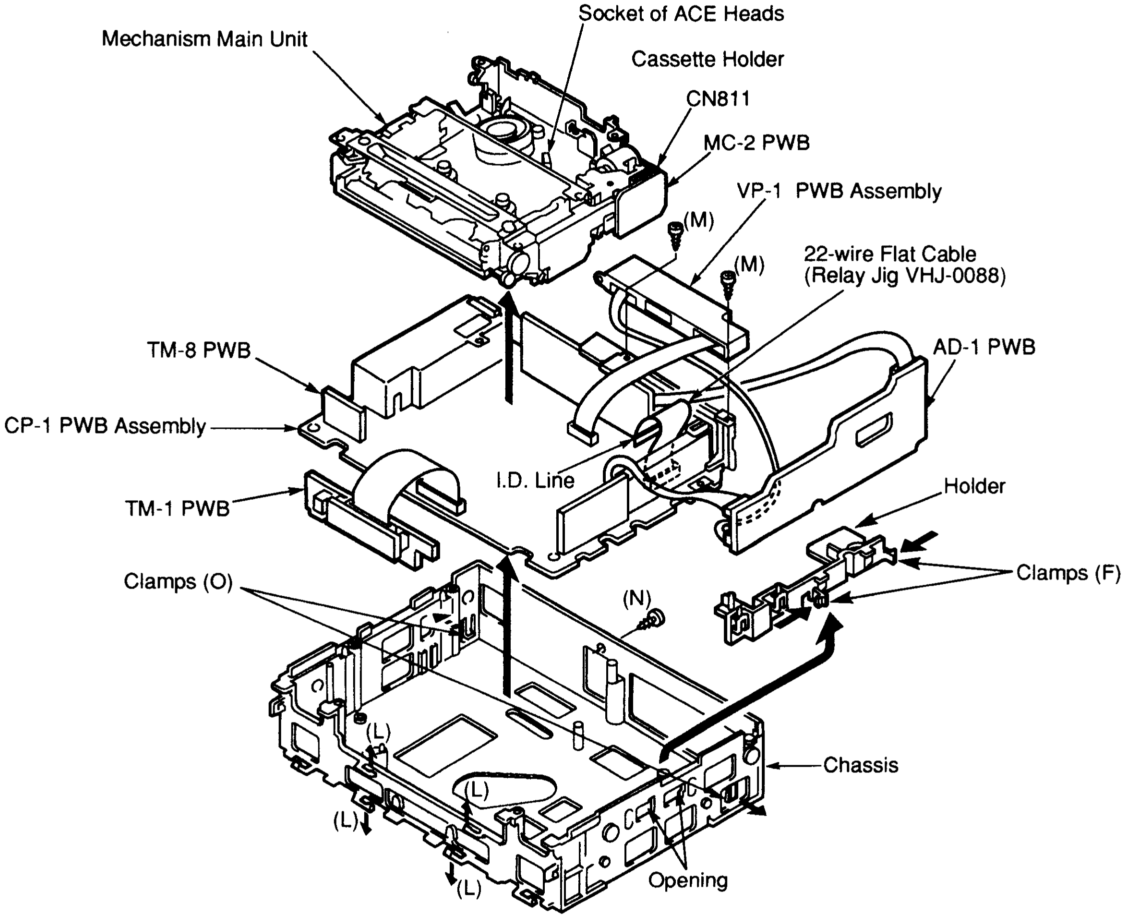

Socket of ACE Heads
Mechanism Main Unit
Cassette Holder
CN811
MC-2 PWB
VP-1 PWB Assembly
(M)
(M)
22-wire Flat Cable
(Relay Jig VHJ-0088)
TM-8 PWB
AD-1 PWB
CP-1 PWB Assembly
I.D. Line
Holder
TM-1 PWB
Clamps (O)
Clamps (F)
(N)
(L)
Chassis
(L)
(L)
(L)
Opening

Fig. 1.1.3

TEMPORARILY SETTING UP AND CONNECTING MAIN PWB ASSEMBLY

The following is an example of how to place and connect the main board without a jig, when repairing the CP-1 PWB assembly (Fig. 1.1.4)

1. Place the mechanism main unit at the fixed position on the chassis.
2. Insert the VP-1 PWB assembly at the fixed position of the mechanism unit and connect the flat cable of the cylinder assembly.
3. Connect 22-wire flat cable to the MC-2 PWB , and 6-pin connector to the socket of the ACE heads.
4. Place the CP-1 PWB assembly above the mechanism main unit along the cassette holder. Insert the tip (P) of the terminal board into the opening (Q) at the side of the chassis, as shown in the enlarge view.

M-TK4H/ETH-4

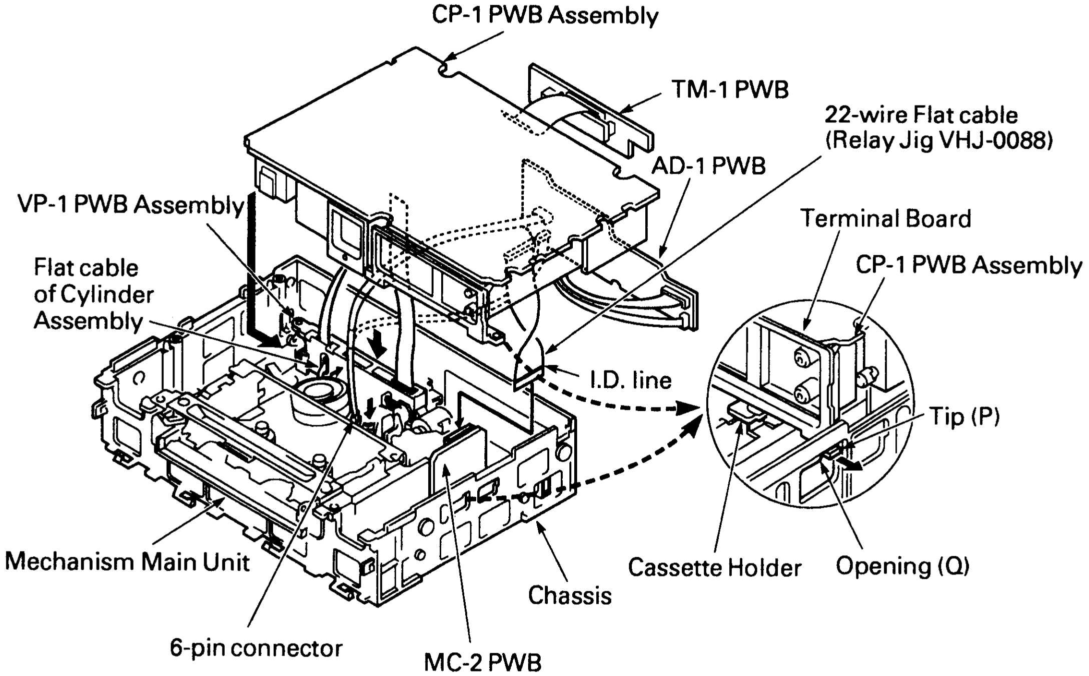

CP-1 PWB Assembly
TM-1 PWB
22-wire Flat cable
(Relay Jig VHJ-0088)
AD-1 PWB
VP-1 PWB Assembly
Terminal Board
CP-1 PWB Assembly
Flat cable
of Cylinder
Assembly
I.D. line
Tip (P)
Mechanism Main Unit
Cassette Holder
Opening (Q)
Chassis
6-pin connector
MC-2 PWB

Fig. 1.1.4

1-2. MAIN CIRCUIT BOARD

L-TK4H/ETH

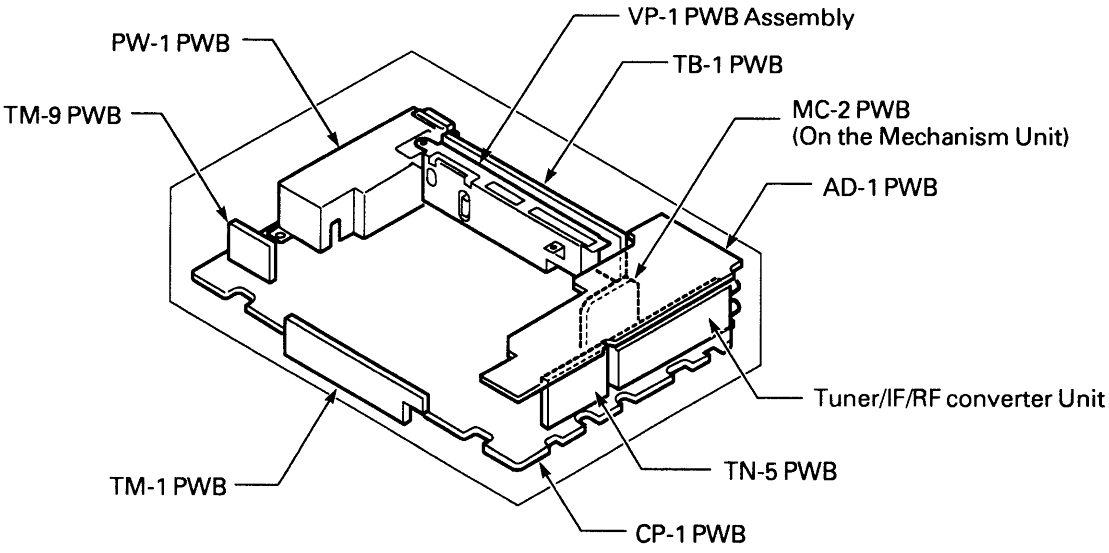

VP-1 PWB Assembly
PW-1 PWB
TB-1 PWB
TM-9 PWB
MC-2 PWB
(On the Mechanism Unit)
AD-1 PWB
Tuner/IF/RF converter Unit
TN-5 PWB
TM-1 PWB
CP-1 PWB

Fig. 1.2.1

2. ELECTRICAL ADJUSTMENT

PREPARATION

This VCR need 3 basic presetting by using the menus displayed on-screen.
After all connection have been made, then follow steps 1 to 3 to preset the VCR.
The 3 presetting steps will be displayed in sequence on TV screen. The setting are entered with the remote control.

Turn on the VCR

1. Adjusting the TV receiver to the video channel: The WELCOME screen will appear. When the video channel has been preset, press the OK button on the remote control.
2. Language selection: Select the desired language, then press the OK button.
3. Tuning control adjustments: When the channel position has been preset, press the MENU/TV button.
   When steps 1 to 3 have been finish, ready to operate the all operating mode.

2-1. SERVO CIRCUIT ADJUSTMENT

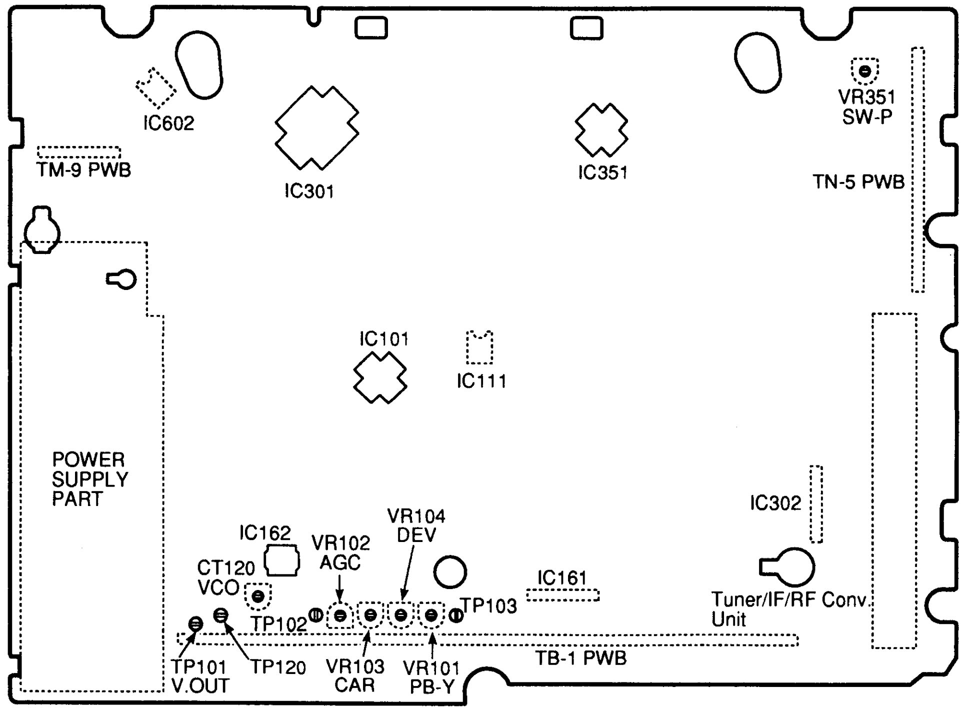
- These adjustments should be carried out upon completion of the tape transport adjustments.
- If the tape transport adjustments (except the tilt adjustment) are carried out after these adjustments, follow the procedures again in Section 2-1-3. SWITCHING POSITION ADJ.
- When a cassette tape is loaded, auto-tracking will be set immediately after starting the first playback. As this will deviate the tracking center set, be sure to press the channel buttons (+) or (–) once directly after starting playback to prevent auto-tracking from being set.

2-1-1. TEST EQUIPMENT AND STANDARDS REQUIRED

Oscilloscope	Vertical sensitivity: 5 mV/DIV, external trigger Band width: more than 10 MHz
Alignment Tape	VHJ-0009 or VHJ-0023: SP mode, monoscope, 6 KHz
Blank Tape	VHS-type cassette tape
Monitor TV	

2-1-2. LOCATION OF ADJUSTMENT POINTS

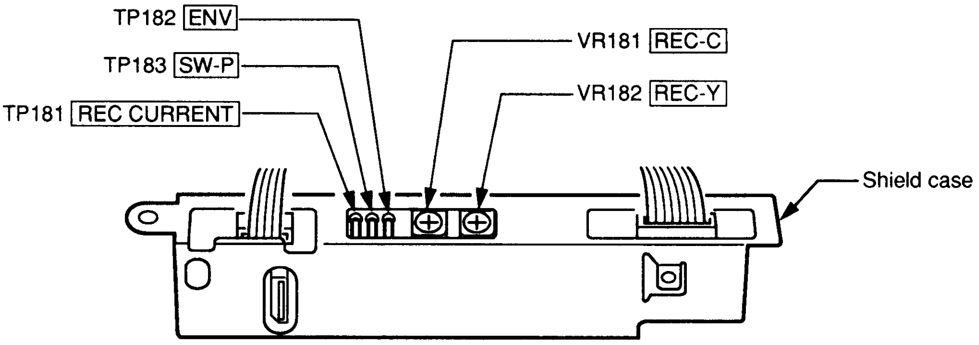
P1B24300B-S1/9


IC602
TM-9 PWB
IC301
IC351
VR351
SW-P
TN-5 PWB
IC101
IC111
POWER
SUPPLY
PART
IC302
VR104
DEV
IC162
VR102
AGC
CT120
VCO
IC161
TP103
TP102
Tuner/IF/RF Conv.
Unit
TB-1 PWB
TP101
V.OUT
TP120
VR103
CAR
VR101
PB-Y

CP-1 PWB (FOIL SIDE)

Fig. 2.1.1

P1B25800B-S1



VP-1 PWB Assembly

Fig. 2.1.2

Note:

- Self-recording means "Record any broadcasting or video signal and play back the just-recorded portion".

2-1-3. SWITCHING POSITION ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
TP101 (VIDEO OUT) TP183 (SW-P)	Oscilloscope	PLAY mode Alignment tape (VHJ-0009 or VHJ-0023)

ADJ. Location	ADJ. Value
VR351 (SW-P)	6.5 H ± 0.5 H

1. Set the tracking control position to the center by pressing CHANNEL buttons (+) and (–) simultaneously. (Tracking center position is displayed on the indicator panel as shown "T –:– ")
2. Adjust VR351 (SW-P) so that the width "T" becomes **6.5 H ± 0.5 H** as shown in Fig. 2.1.3.

WS-SWP

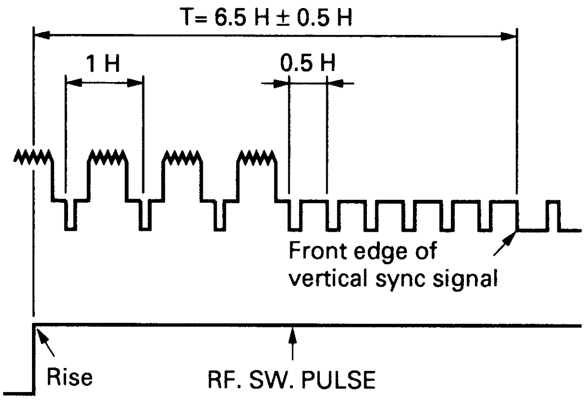


Fig. 2.1.3

2-1-4. SLOW TRACKING ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
Picture of monitor TV	Color bar generator or Broadcasting Monitor	Self-recording (SP mode) SLOW mode Blank tape Self-recording (LP mode) SLOW mode Blank tape

ADJ. Location	ADJ. Value
CHANNEL (+) button CHANNEL (–) button	—

1. Set the tracking control to the center position by pressing CHANNEL buttons (+) and (–) simultaneously. (Tracking center position is displayed on the indicator panel as shown "T –:– ")
2. Play back the self-recoreded portion and set the VCR in the SLOW mode with the remote control unit.
3. Confirm that there is no noise on the slow playback display.
4. Press the CHANNEL button (+) about three times and check that noise dose not appear at the upper part of the display.
5 Adjust the tracking control to the center again.
6. Press the CHANNEL button (–) the same number of times as in the step 4 (about three times) and check that noise dose not appear at the lower part of the display.

Notes:

- CHANNEL button also servers as TRACKING button.
- When the CHANNEL button is released, after a few seconds, the display on the indicator is turned to time display.

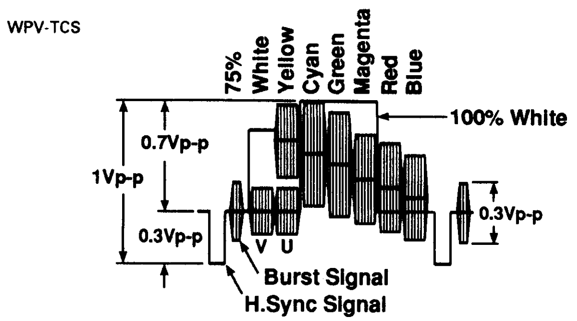
2-2. VIDEO CIRCUIT ADJUSTMENT

- Before making the following adjustments, Section 2-1. SERVO CIRCUIT ADJUSTMENT should be completed.
- Use the relay jig to provide simple adjustment of the VP-1 PWB assembly.

2-2-1. TEST EQUIPMENT AND STANDARDS REQUIRED

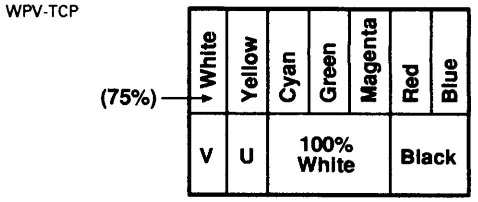
Color Bar Signal Generator	PAL Color bar signel with 100% white level (EBU color bar signel)
Oscilloscope	Vertical sensitivity: 5 mV/DIV, external trigger Band width: more than 10 MHz
Digital Voltmeter	DC range
Alignment Tape	VHJ-0008 or VHJ-0023: SP mode, color bar, 1kHz (Color bar signal waveform is described below. Refer to Fig. 2.2.1)
Blank Tape	VHS-type cassette tape
Oscilloscope Probe	Input capacity: less than 25 pF (10:1) less than 40 pF (1:1) Covering frequency: DC ~ 40 MHz (10:1) DC ~ 30 MHz (1:1)
Frequency Counter	8 significant digits
Adjustment Relay Jig	VHJ-0067: 12-wire flat cable for VP-1 PWB Assembly

ALIGNMENT TAPE COLOR BAR SIGNAL


WPV-TCS
75%
White
Yellow
Cyan
Green
Magenta
Red
Blue
100% White
0.7Vp-p
1Vp-p
0.3Vp-p
0.3Vp-p
V
U
Burst Signal
H.Sync Signal

COLOR BAR SIGNAL WAVEFORM (VHJ-0008)

Fig. 2.2.1


WPV-TCP
(75%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
V
U
100% White
Black

COLOR BAR PATTERN (VHJ-0008) ON MONITOR TV

Fig. 2.2.2

2-2-2. ADJUSTMENT RELAY JIG

Connect the flat cable end from the cylinder assembly to the VP-1 PWB assembly using the relay jig to provide simple repairing and adjustment of the VP-1 PWB assembly, as shown in Fig. 2.2.3. Further, when adjusting the VP-1 PWB assembly, be sure to make contact an end of shield case with bracket of the VP-1 PWB assembly to maintain the shield effect. If the VP-1 PWB assembly does not contact, there is insufficient ground and no proper play back image can be obtained.

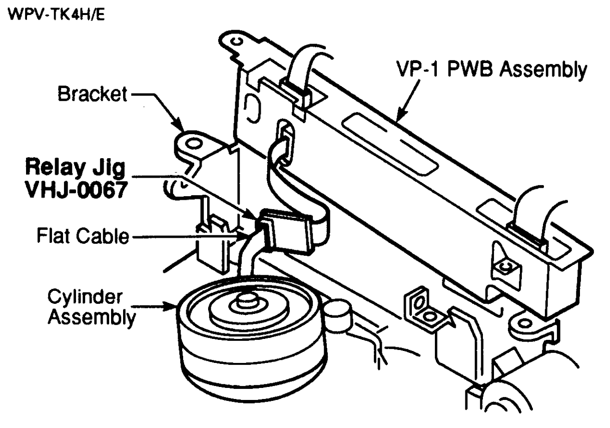
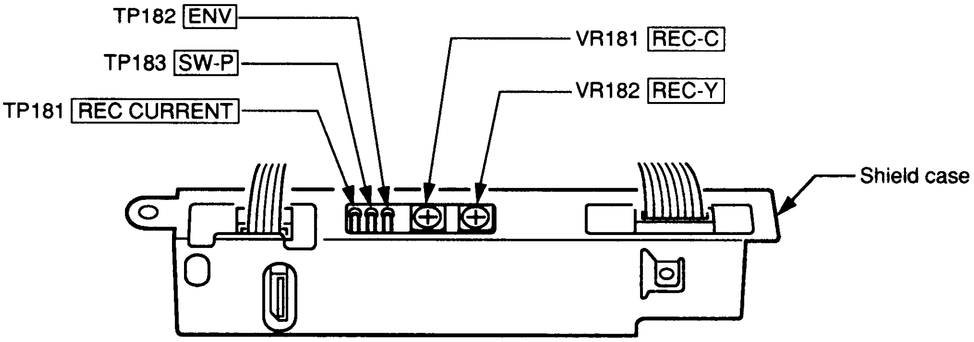

WPV-TK4H/E
Bracket
VP-1 PWB Assembly
Relay Jig
VHJ-0067
Flat Cable
Cylinder Assembly

Fig. 2.2.3

2-2-3. LOCATION OF ADJUSTMENT POINTS

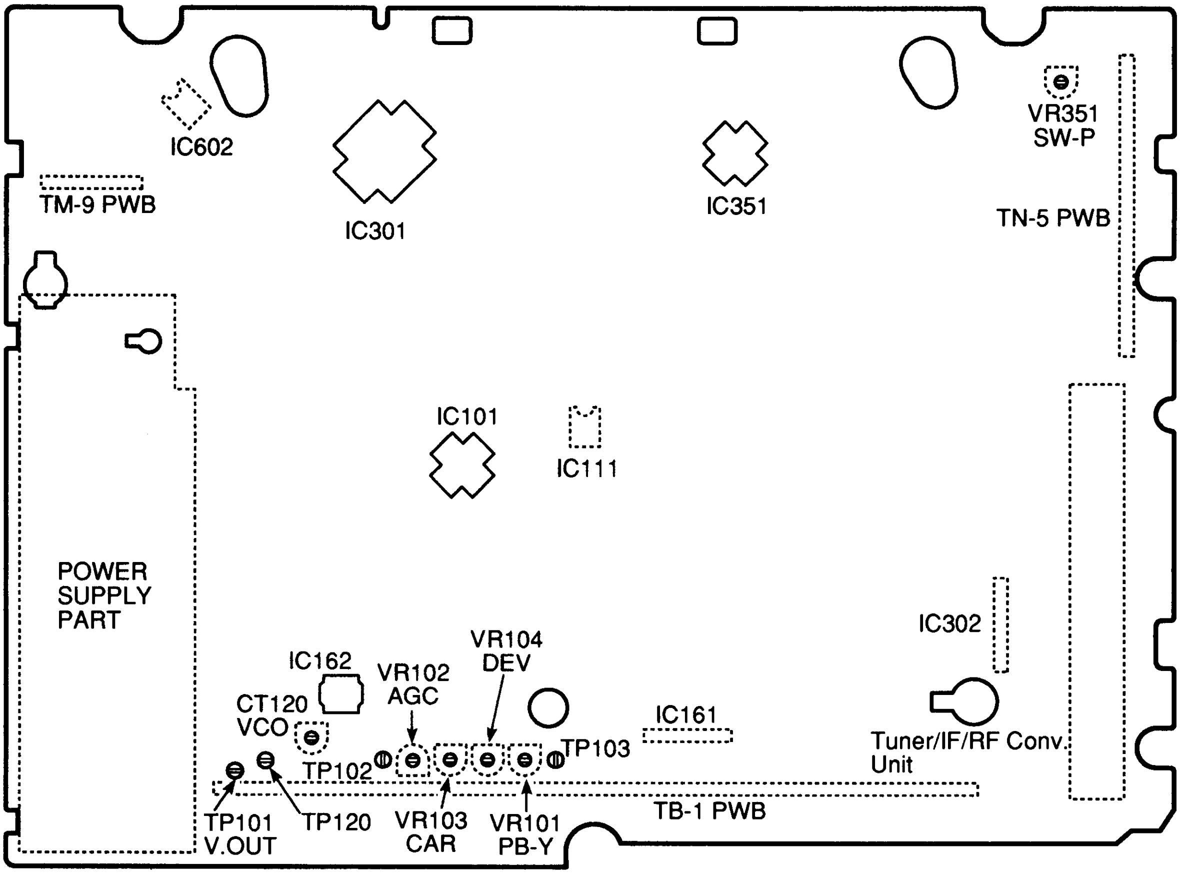
P1B25800B-V1


TP182 ENV
TP183 SW-P
TP181 REC CURRENT
VR181 REC-C
VR182 REC-Y
Shield case

VP-1 PWB Assembly

Fig. 2.2.4

P1B24300B-V1/9


IC602
TM-9 PWB
IC301
IC351
VR351
SW-P
TN-5 PWB
IC101
IC111
POWER
SUPPLY
PART
IC302
VR104
DEV
IC162
VR102
AGC
CT120
VCO
IC161
TP103
TP102
Tuner/IF/RF Conv.
Unit
TP101
V.OUT
TP120
VR103
CAR
VR101
PB-Y
TB-1 PWB

CP-1 PWB (FOIL SIDE)

Fig. 2.2.5

Notes:
- Self-recording means "Record the video signal and play back the just-recorded portion".
- Connect the monitor TV to the VIDEO OUTPUT terminal, before making following adjustments.

2-2-4. AGC LEVEL ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
TP102	Color bar generator Oscilloscope (10:1 probe)	E-E mode

ADJ. Location	ADJ. Value
VR102 (AGC)	0.5 Vp-p ± 0.025 Vp-p

1. Connect the color bar generator to the VIDEO INPUT terminal.
2. Adjust VR102 (AGC) for **0.5 Vp-p ± 0.025 Vp-p** as shown in Fig. 2.2.6.

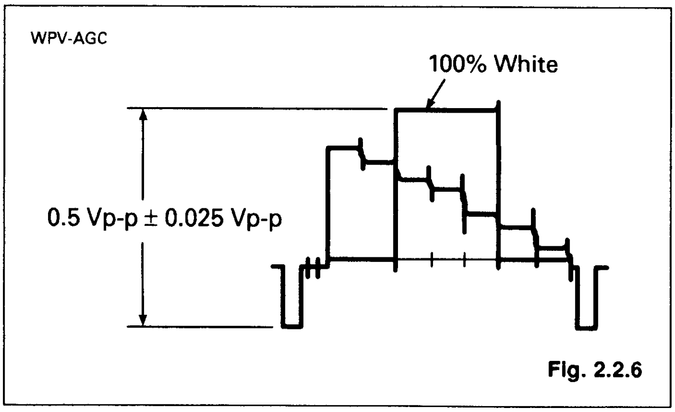


Fig. 2.2.6

2-2-5. PB-Y LEVEL ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
TP101	Oscilloscope (10:1 probe)	PLAY (SP) mode Alignment tape (VHJ-0008 or VHJ-0023)

ADJ. Location	ADJ. Value
VR101 (PB-Y)	1 Vp-p ± 0.05 Vp-p

1. Terminate the VIDEO OUTPUT terminal with a 75Ω resistor.
2. Adjust VR101 (PB-Y) for the video luminance signal level of **1 Vp-p ± 0.05 Vp-p**. (Refer to Fig. 2.2.7)

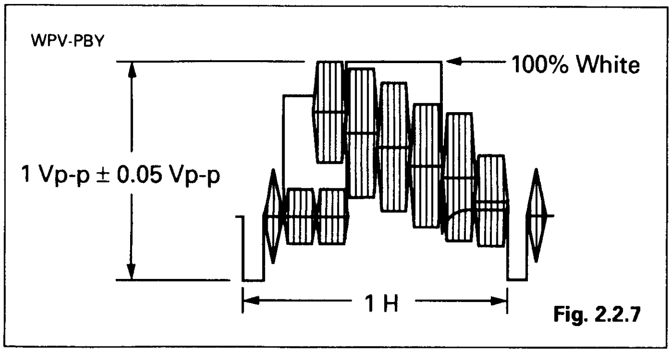


Fig. 2.2.7

2-2-6. CARRIER SET ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
TP103	Color bar generator Frequency counter	REC (SP) mode

ADJ. Location	ADJ. Value
VR103 (CAR)	3.83 MHz ± 0.05 MHz

1. Connect the color bar generator to the VIDEO INPUT terminal.
2. After removing the first color bar signal input from the video input terminal, immediately adjust VR103 (CAR) so that the frequency becomes **3.83MHz ± 0.05 MHz.**

2-2-7. DEVIATION ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
TP101	Color bar generator Oscilloscope (10:1 probe)	Self-recording (SP) mode Blank tape

ADJ. Location	ADJ. Value
VR104 (DEV)	1 Vp-p ± 0.05Vp-p

1. Record the color bar signal on the blank tape.
2. Play back of the just-recorded portion.
3. Adjust VR104 (DEV) for **1 Vp-p ± 0.05 Vp-p** as shown in Fig. 2.2.8.
4. If the adjustment value is not satisfactory, adjust VR104 (DEV) and repeat steps 2 to 3.

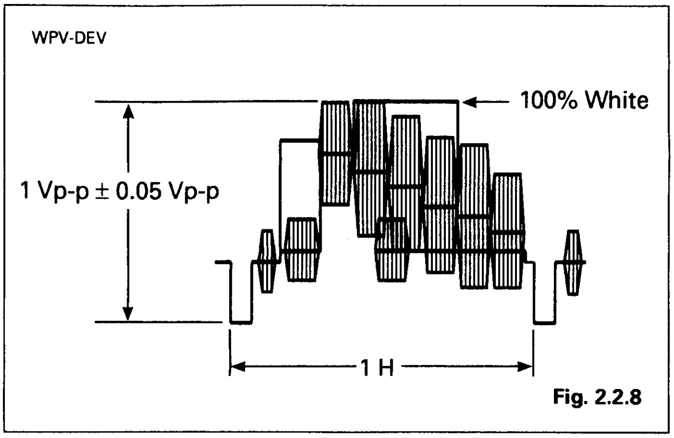


Fig. 2.2.8

2-2-8. C REC CURRENT ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
TP181 (on VP-1 PWB)	Color bar generator Oscilloscope (1:1 probe)	REC (SP) mode Blank tape

ADJ. Location	ADJ. Value
VR181 (REC-C)	150 mVp-p ± 5 mVp-p

1. Connect the ground of the oscilloscope to the shield case of the VP-1 PWB assembly.
2. Adjust VR182 (REC-Y) for the minimum video luminance signal level.
3. Adjust VR181 (REC-C) so that the video chrominance signal level is **150 mVp-p ± 5 mVp-p.** (Refer to Fig. 2.2.9)

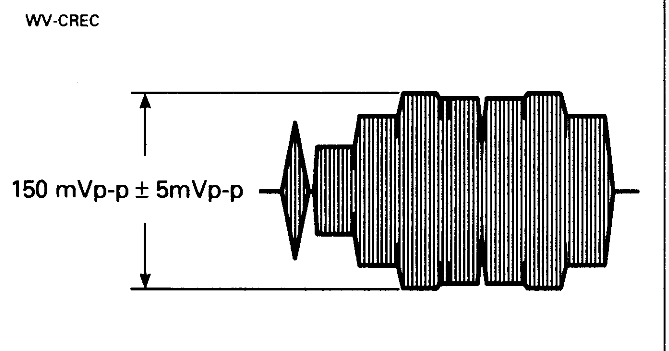


Fig. 2.2.9

2-2-9. Y REC CURRENT ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
TP181 (on VP-1 PWB)	Color bar generator Oscilloscope (1:1 probe)	REC(SP)mode Blank tape

ADJ. Location	ADJ. Value
VR182 (REC-Y)	470 mVp-p ± 10 mVp-p

1. Connect the ground of the oscilloscope to the shield case of the VP-1 PWB assembly.
2. Adjust VR182 (REC-Y) so that the video luminance signal level at the sync tip is **470 mVp-p** ± **10 mVp-p**. (Refer to Fig. 2.2.10)

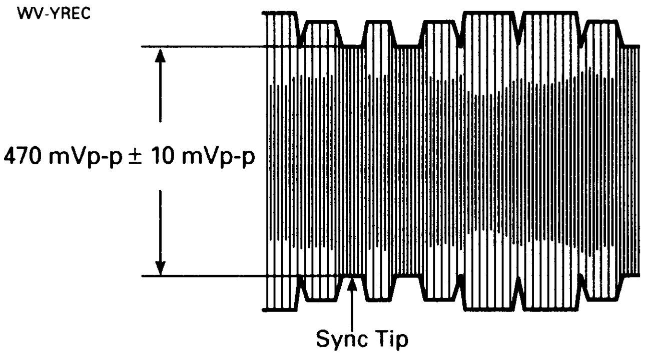


Fig. 2.2.10

2-2-10. VCO (on screen assist) ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
TP120	Color bar generator Digital voltmeter	E-E mode

ADJ. Location	ADJ. Value
CT120 (VCO)	2.5 V ± 0.3 V

1. Connect the digital voltmeter (DC range) to TP120 and GND.
2. Adjust CT120 (VCO) so that the voltage is **2.5 V ± 0.3 V.**

2-3. AUDIO CIRCUIT ADJUSTMENT

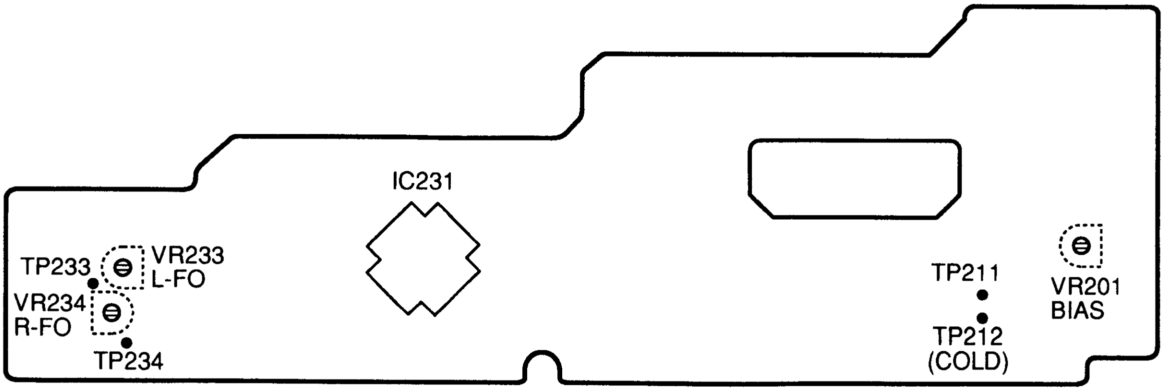
- Before making these adjustments, (especially, the tape guide height and audio control erase head height adjustments) should be carried out, so that the tape traveling between the loading guide pole and the audio control erase head runs without fluttering, twisting, curling.
- Before making these adjustments, Section 2-1. SERVO and Section 2-2. VIDEO circuit adjustments should be carried out.

2-3-1. TEST EQUIPMENT AND STANDARDS REQUIRED

Oscilloscope	Vertical sensitivity : 10 mV/DIV Band width : more than 30 MHz
AC Voltmeter	Effective value indication Input frequency : 10 Hz ~ 20 kHz Input Impedance : more than 1 MΩ Measurement level : 1mV (full scale)
Frequency Counter	Input frequency : 20 Hz ~ 10 MHz
Blank Tape	VHS-type cassette tape

2-3-2. LOCATION OF ADJUSTMENT POINTS

P1B26100C-A1



AD-1 PWB (FOIL SIDE)

Fig. 2.3.1

AUDIO NORMAL CIRCUIT

Notes:

- Set the following switch or On-screen menu to the positions indicated below, before making following adjustments.

SWITCH or ON-SCREEN MENU	POSITION
TAPE SPEED (Remote control)	SP
0/AV (Remote control)	AV
AV (SYSTEM SETTING menu)	AV1
AUDIO (SYSTEM SETTING menu)	MONO

To select AV and AUDIO mode

1. Press the MENU/TV button on the remote control, the MAIN MENU appears.
2. "MODE" is selected, then press the OK button. MODE SETTING menu will appear.
3. "SYSTEM" is selected, then press the OK button. RECORDING AND PLAYBACK SYSTEM SETTING menu will appear.
4. "AV" : "AV1" and "AUDIO" : "MONO" are selected, press the OK button.

2-3-3. BIAS LEVEL ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
TP211 (HOT) TP212 (COLD)	Oscilloscope AC voltmeter Frequency counter	REC (SP) mode Blank tape

ADJ. Location	ADJ. Value
VR201 (BIAS)	24 mVrms

1. Load the VCR with a blank tape and select the REC (SP) mode without all incoming signal.
2. After confirming on the oscilloscope that a 70 kHz ± 5kHz sine wave is being output, adjust VR201 (BIAS) so that the AC voltmeter's reading is **24 mVrms**.

AUDIO FM (Hi-Fi) CIRCUIT

Notes:

- Before making these adjustments, check that the surface of the parts touching the tape such as the A-FM head or guides are clean.
- Set the following switch or On-screen menu to the positions indicated below, before making following adjustments.

SWITCH or ON-SCREEN MENU	POSITION
TAPE SPEED (Remote control)	SP
0/AV (Remote control)	AV
AV (SYSTEM SETTING menu)	AV1
AUDIO (SYSTEM SETTING menu)	ST

To select AV and AUDIO mode

1. Press the MENU/TV button on the remote control, the MAIN MENU appears.
2. "MODE" is selected, then press the OK button. MODE SETTING menu will appear.
3. "SYSTEM" is selected, then press the OK button. RECORDING AND PLAYBACK SYSTEM SETTING menu will appear.
4. "AV" : "AV1" and "AUDIO" : "ST" are selected, press the OK button.

2-3-4. A-FM CARRIER FREQUENCY ADJ.

Measuring Point	Measuring Equipment	ADJ. Condition
TP233 (1.4 MHz) TP234 (1.8 MHz)	Frequency counter	REC (SP) mode Blank tape

ADJ. Location	ADJ. Value
VR233 (L-FO)	1.4 MHz +4/–6 kHz
VR234 (R-FO)	1.8 MHz +4/–6 kHz

1. Connect a frequency counter to TP233 (Lch), TP234 (Rch) and ground.
2. Adjust VR233 (L-FO) so that in the zero level signal status the frequency at TP233 becomes **1.4 MHz +4/–6 kHz**.
3. Adjust VR234 (R-FO) so that in the zero level signal status the frequency at TP234 becomes **1.8 MHz +4/–6 kHz**.

2-5. IF CIRCUIT ADJUSTMENT

- In this model, the circuits of the TUNER, IF, and RF converter have been made into one. Therefore, should one circuit malfunction, the whole unit must be replaced.

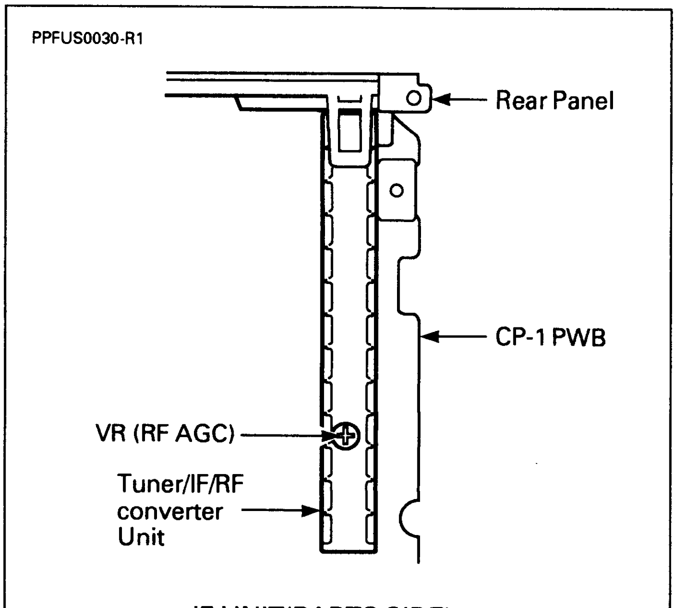
Note:
The TUNER/IF/RF converter unit dose not need any adjustments, because precise adjustments have been down befor shipment.

- The adjustments for the IF (RF AGC) circuit of the TUNER/IF/RF converter unit are described below.

2-5-1. TEST EQUIPMENT AND STANDARD REQUIRED

Monitor TV	

2-5-2. LOCATION OF ADJUSTMENT POINT


PPFUS0030-R1
Rear Panel
CP-1 PWB
VR (RF AGC)
Tuner/IF/RF converter Unit

IF UNIT(PARTS SIDE) **Fig. 2.5.1**

2-5-3. RF AGC ADJ.

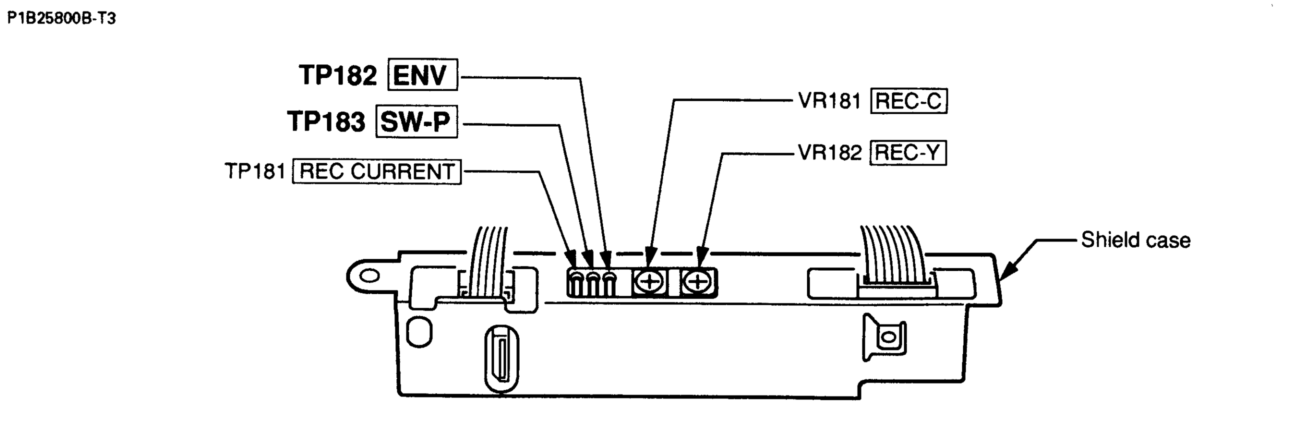
Measuring Point	Measuring Equipment	ADJ. Condition
Picture of monitor TV	Monitor TV	E-E mode

ADJ. Location	ADJ. Value
VR (RF AGC) (on the IF circuit)	S/N is best point

1. Connect the monitor TV to UHF ANTENNA OUTPUT terminal.
2. Connect the UHF antenna to UHF ANTENNA INPUT terminal.
3. Receive the middle electrical field (70 dBμ ~ 90 dBμ) of the UHF channel, and slowly turn VR (RF AGC) from the point where snow-noise is present to the point where it just disappears from the monitor TV.
4. Confirm by monitor TV that there is no beat and saturation (S/N is best point) when receiving any TV channel.

3. TEST POINT FOR TAPE PATH ADJUSTMENT

Test point TP182 (ENV) and TP183 (SW-P) for tape path adjustment is shown in figure below.
For adjustment, refer to the Mechanism Service InformationTP30036.


P1B25800B-T3
TP182 ENV
TP183 SW-P
TP181 REC CURRENT
VR181 REC-C
VR182 REC-Y
Shield case

VP-1 PWB Assembly **Fig. 3.1**

4. PARTS LIST

ACCESSORIES

LOCATION	PARTS NO.	DESCRIPTION
	645 006 1004	REMOCON(WITH COVER BATTERY)
	613 150 5124	COVER BATTERY(FOR REMOCON)
	613 158 6864	INSTRUCTION MANUAL
	613 132 6132	CABLE,ANT
OR	613 132 5975	CORD
⚠	613 136 6411	CORD,POWER
OR ⚠	613 140 7473	CORD,POWER

****

PACKING MATERIALS

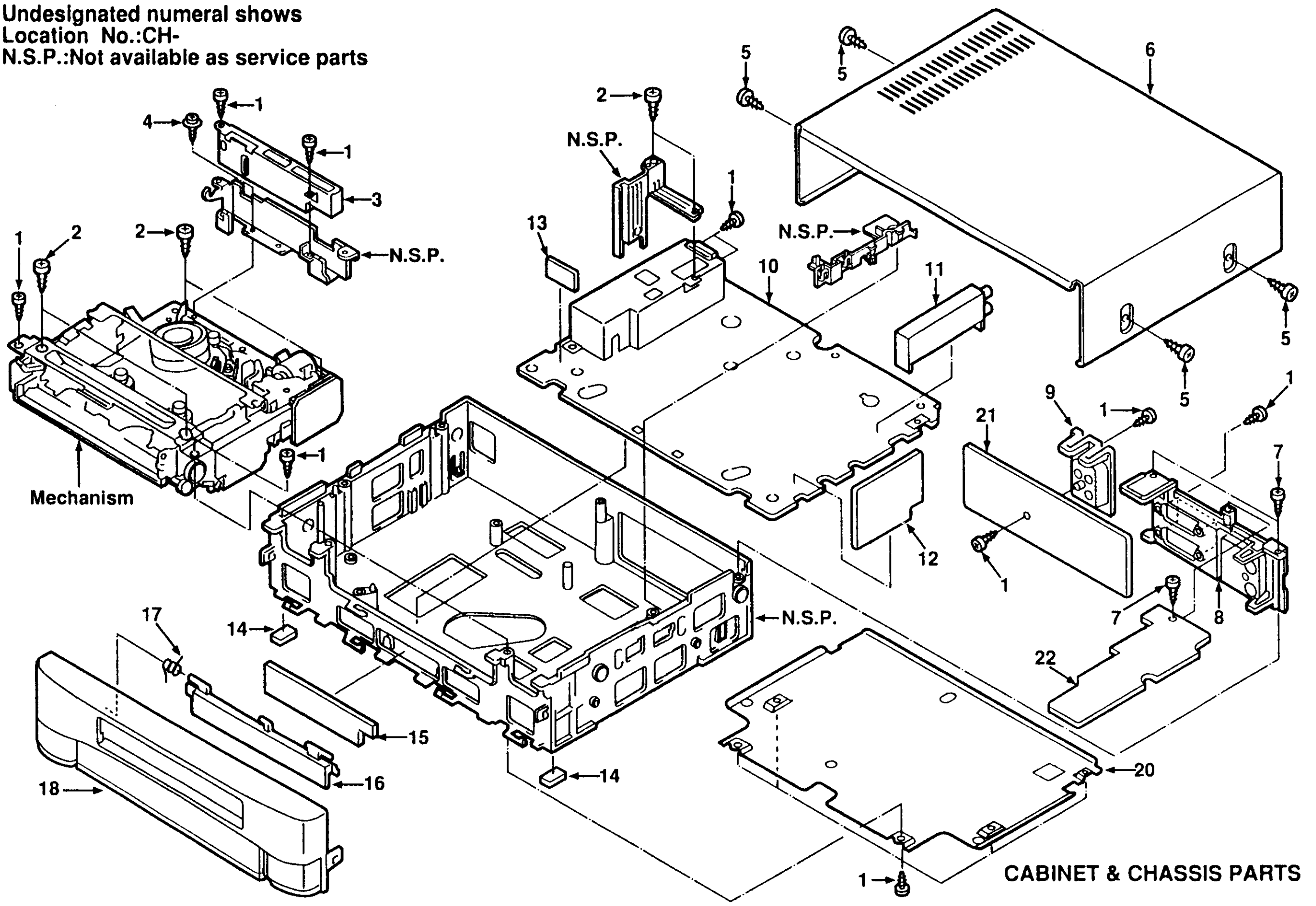
LOCATION	PARTS NO.	DESCRIPTION
	613 158 6444	CARTON CASE
	613 150 2291	CUSHION,FRONT
	613 150 2307	CUSHION,BACK
	613 099 1768	POLYE COVER,INNER-K

****

CABINET & CHASSIS PARTS

LOCATION	PARTS NO.	DESCRIPTION
CH-1	411 137 0007	SCR L-TPG BIN 3X10
CH-2	411 021 7907	SCR S-TPG BIN 4X12
CH-3	613 154 8015	COMPL PWB,VP-1
CH-4	411 047 7509	SCR PAN+FLG 3X6
CH-5	412 028 9406	SPECIAL SCREW
CH-6	613 147 9661	COMPL,COVER TOP
CH-7	411 021 3800	SCR S-TPG BIN 3X10
CH-8	613 154 0842	TERMINAL
CH-9	613 154 0811	TERMINAL
CH-10	613 158 6123	COMPL PWB,CP-1-A
CH-11	645 003 9966	TUNER,RF/TU/IF
CH-12	613 154 1863	COMPL PWB,TN-5
CH-13	613 158 5751	COMPL PCB,TM-9
CH-14	613 121 1001	STAND,FELT,FRONT
CH-15	613 153 2465	COMPL PWB,TM-1
CH-16	613 158 6338	DOOR CASSETTE
CH-17	613 140 7459	SPRING
CH-18	613 158 6277	ASSY,CABINET FRONT
CH-20	613 139 2182	COVER BOTTOM
CH-21	613 154 1856	COMPL PWB,TB-1
CH-22	613 154 1870	COMPL PWB,AD-1

Undesignated numeral shows
Location No.:CH-
N.S.P.:Not available as service parts



CABINET & CHASSIS PARTS

CH-TK4H/ETH2

MECHANISM PARTS

DB803500
MB0050##

MECHANISM PARTS 1

LOCATION	PARTS NO.	DESCRIPTION
DR-1	613 097 5355	COMPL,CYLINDER,4H6P-R
DR-2	411 038 1608	SCR PAN+W 3X8
DR-3	613 097 5362	ASSY,CYLINDER,UPR 4H6P-R
DR-4	613 095 9881	ASSY,CYLINDER,LWR 6K
DR-5	613 097 2170	SPACER,MOTOR 0.3T
DR-6	613 088 9072	BASE,CYLINDER
DR-7	411 047 7509	SCR PAN+FLG 3X6
DR-8	411 047 5000	SCR PAN+FLG 2.6X8
DR-9	613 132 3520	STATOR,MOTOR CYL
OR	613 085 7279	STATOR,MOTOR CYL
DR-10	411 044 8301	SCR PAN+SW 2.3X10
OR	411 044 9209	SCR PAN+SW 2.3X8
DR-11	613 022 4019	ROTOR,MOTOR CYL
DR-12	411 044 9001	SCR PAN+SW 2.3X6
MB-1	613 123 4802	SLEEVE
MB-2	613 053 3227	SPECIAL WASHER
MB-3	613 123 4970	TAPE GUIDE
MB-4	411 004 5302	NUT HEX (3)
MB-5	613 123 9418	CAP
MB-6	613 152 8079	SLIDE,ACT PINCH
MB-7	613 021 9800	ASSY,LEVER,CAM PINCH
MB-8	411 109 2008	WASHER Y 3.1X8X0.5
MB-9	613 022 1797	SPRING,ACE HEAD
MB-10	613 144 5741	COMPL,BRACKET,HEAD
MB-11	613 110 1692	SLEEVE,ACE HEAD
MB-12	412 015 8207	SPECIAL NUT (M5)
MB-13	411 120 0007	SCR PAN+SW+W 2.6X5
MB-14	613 120 3631	BRACKET,STOPPER
MB-15	613 022 1582	SPRING,SLIDE BRAKE
MB-16	613 094 9240	COMPL,SLIDE,CAM
MB-17	613 022 1575	SPRING,LINK LOCK
MB-18	613 022 2725	DAMPER
MB-19	613 022 2534	GEAR,FRONT LOAD
MB-20	613 094 1206	ASSY,LEVER,FRONT
MB-21	613 134 2910	GEAR,HELICAL FRONT
MB-22	411 046 8002	SCR PAN+SW+W 2.6X6
MB-23	411 023 2801	SCR S-TPG PAN 2.6X6
MB-24	411 023 3303	SCR S-TPG PAN 2.6X8
OR	411 021 3107	SCR S-TPG BIN 2.6X8
MB-28	613 077 3227	HOLDER,WORM
MB-29	613 027 0382	WASHER
MB-30	613 078 8320	ASSY,WORM,FRONT
MB-31	613 117 0599	BRACKET,HOLDER
MB-32	613 093 9159	PLATE,NUT
MB-33	613 093 8374	DAMPER,MOTOR
MB-34	613 077 3616	DAMPER,WORM
MB-35	613 121 9960	ASSY,LOADING MOTOR
MB-36	613 092 9945	DAMPER,MOTOR
MB-37	613 132 8075	COMPL PCB,MC-3
MB-38	613 153 5107	COMPL PWB,MC-2
MB-39	613 110 0374	ROTARY SWITCH
MB-40	411 126 5303	SCR PAN 2.6X13
MB-41	613 092 9921	ASSY,SLIDE,FRONT
MB-42	613 092 5985	SPRING,LEVER LOAD
MB-43	613 092 5992	SPRING,LEVER ACT
MB-44	613 092 5886	HOLDER,WORM
OR	613 138 8628	HOLDER,WORM
MB-45	613 027 0627	WASHER 2.1X6X0.5
MB-46	613 092 9938	ASSY,WORM,LOAD
MB-47	613 022 2985	BELT,LOADING
MB-48	412 033 4106	WASHER SLIT 2.6X5X0.50
MB-49	613 077 3579	GEAR,HELICAL
MB-50	613 102 9293	ASSY,LEVER,REV GUIDE
MB-51	613 022 1568	SPRING,REVIEW LEVER
MB-52	613 022 0158	COMPL,PINCH ROLLER
MB-53	613 147 9951	SPRING,PINCH ROLLER
MB-54	411 109 2107	WASHER Y 3.6X6X0.5
MB-55	613 078 8160	COMPL,LEVER,ACT BRAKE
MB-57	613 135 7655	PLATE,BGR
MB-58	613 145 5009	ASSY,MOUNTING,ROLLER S
MB-59	613 145 5016	ASSY,MOUNTING,ROLLER T
MB-60	411 063 0904	SCR SET HEX-SCT 2X3
MB-61	613 022 0233	ASSY,GUIDE,ROLLER
MB-63	645 000 2533	HEAD,FULL ERASE
MB-66	613 153 1871	LEVER,FE HEAD
MB-67	613 022 1698	SPRING,ERASE HEAD
MB-80	411 109 1803	WASHER Y 2.6X6X0.5
MB-81	613 157 4052	ASSY,ROLLER,CLEANER
MB-82	613 143 1881	ASSY,LEVER,CLEANER
MB-83	613 119 8593	SPRING
MB-84	613 142 9055	BRACKET,CLEANER
MB-90	613 153 8627	FLEXIBLE FLAT CABLE,CN811-CN303

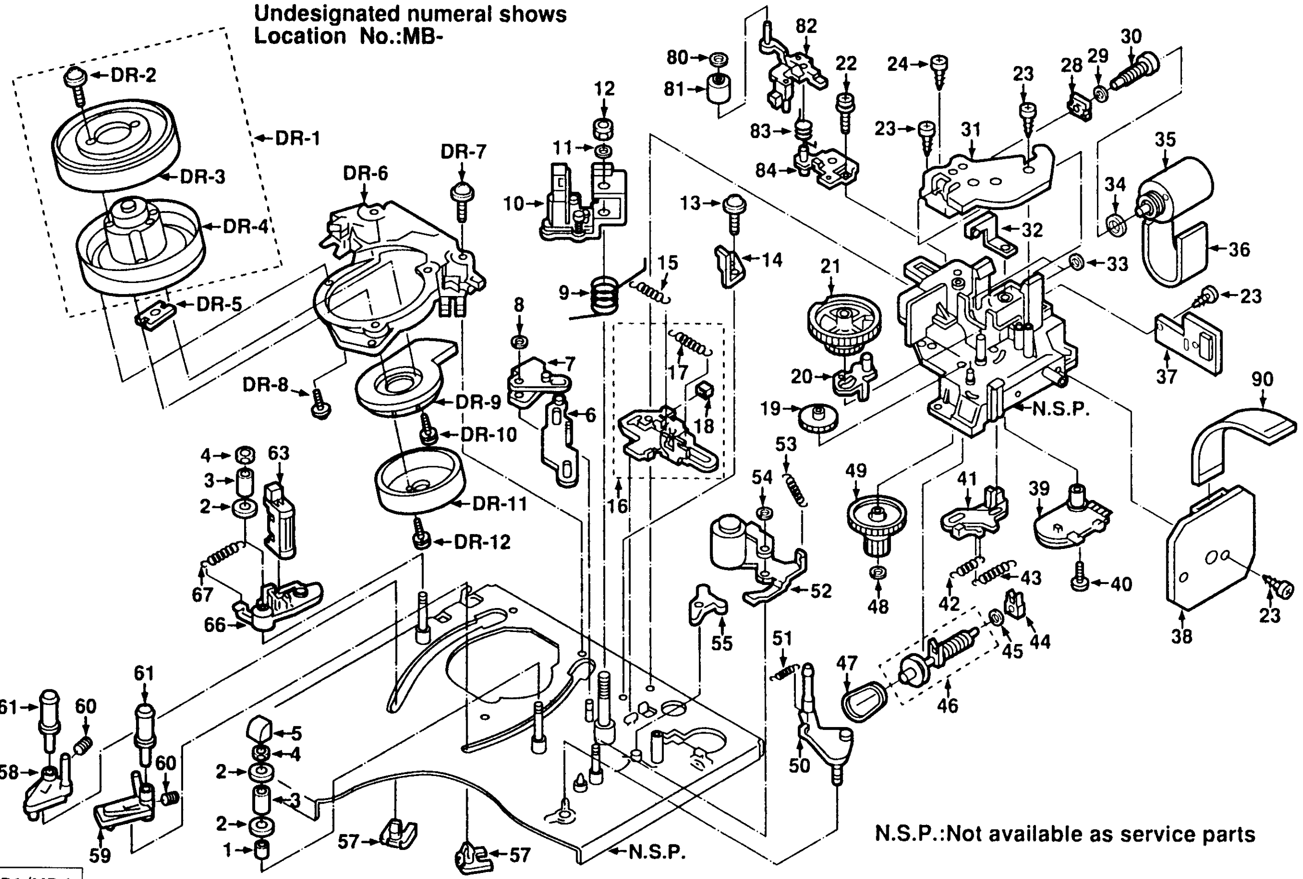
****

MECHANISM PARTS 2

LOCATION	PARTS NO.	DESCRIPTION
MC-1	645 000 5053	MOTOR,CAPSTAN DC 3W
MC-2	613 022 2978	BELT,REEL DRIVE
MC-3	613 135 4609	COMPL,LEVER,CLUTCH
MC-6	613 022 1520	SPRING,LEVER CLUTCH
MC-7	613 082 3434	LEVER,CHANGE CLUTCH
MC-8	613 022 1711	SPRING,CHANGE CLUTCH
MC-9	613 081 7518	ASSY,BRAKE CAPSTAN
MC-10	613 098 2285	SPRING,CAPSTAN
MC-12	411 021 3107	SCR S-TPG BIN 2.6X8
MC-13	411 109 2008	WASHER Y 3.1X8X0.5
MC-14	613 142 9093	SLIDE,CAM PLATE
MC-15	613 022 2701	CAM,MODE
MC-16	411 109 1902	WASHER Y 3.1X6X0.5
MC-17	613 135 7686	CAM,MAIN
MC-18	613 135 7532	ASSY,RACK,LOAD
MC-19	411 109 1803	WASHER Y 2.6X6X0.5
MC-20	613 135 7648	SPACER,RACK LOAD
MC-22	411 047 6809	SCR PAN+FLG 3X4
MC-23	613 021 9763	ASSY,EARTH,CYL
MC-24	613 135 7662	GEAR,LOAD TAKE UP
MC-25	613 022 1551	SPRING,GEAR LOAD T
MC-26	613 021 9879	ASSY,LEVER,LOAD T
MC-27	613 090 6373	GEAR,LOAD S
MC-28	613 022 1704	SPRING,GEAR LOAD S
MC-29	613 021 9862	ASSY,LEVER,LOAD S
MC-30	613 022 2039	LEVER,RETURN TENSION
MC-31	613 091 3104	ASSY,LEVER CONTROL
MC-34	411 028 6309	SCR S-TPG PAN 2.6X6
MC-35	412 015 8603	SPECIAL WASHER 3.1X6X0.25
MC-36	613 130 9890	ASSY,GEAR,FRICTION
MC-37	412 045 4606	SPECIAL WASHER 2.4X6X0.25
MC-38	411 092 0906	WASHER Z 2.6X10X0.5
MC-40	411 100 0300	SCR S-TPG BIN 2.6X5
MC-41	613 120 9060	COMPL,MC-1

MECHANISM PARTS 1

Undesignated numeral shows Location No.:MB-



DR-1
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DR-4
DR-5
DR-6
DR-7
DR-8
DR-9
DR-10
DR-11
DR-12
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6
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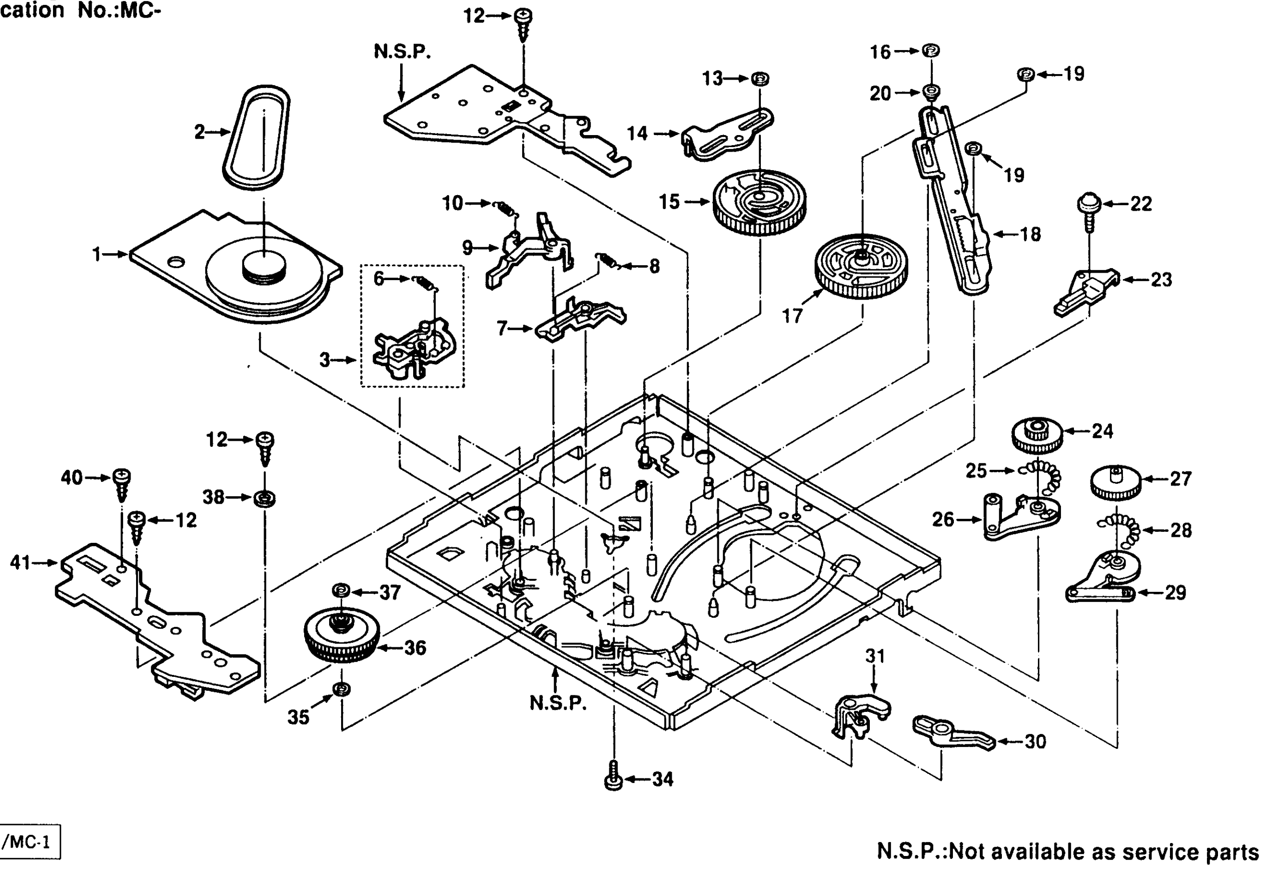
N.S.P.:Not available as service parts

92TP1/MB-1

MECHANISM PARTS 2

Undesignated numeral shows Location No.:MC-



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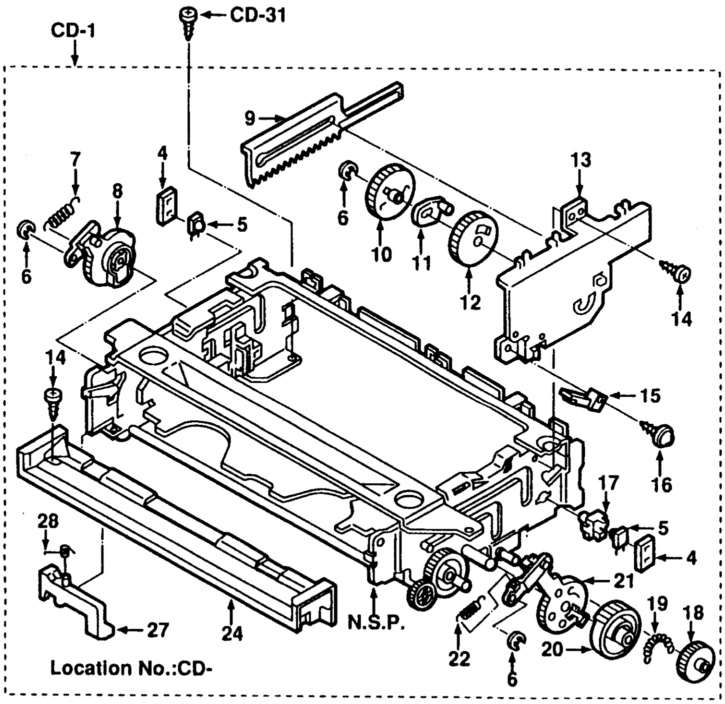
93TP1/MC-1

N.S.P.:Not available as service parts

MECHANISM PARTS 3

LOCATION	PARTS NO.	DESCRIPTION
CD-1	613 142 9581	COMPL,CASSETTE MECHANISM
CD-4	613 022 0585	LID
CD-5	407 098 3201	PHOTO COUPLE PN150SAN
CD-6	411 015 9801	RING E 2.3
CD-7	613 022 1643	SPRING,LINK L
CD-8	613 022 0073	ASSY,GEAR,LEVER L
CD-9	613 022 2695	RACK
CD-10	613 141 6109	GEAR,LOCK
CD-11	613 139 8962	ASSY,LEVER,PINION
CD-12	613 022 2626	GEAR,PINION
CD-13	613 021 9657	ASSY,BRACKET,GEAR
CD-14	411 027 1305	SCR S-TPG BIN 2.6X4
CD-15	613 095 0949	SW,SPECIAL
CD-16	411 106 9208	SCR PAN+SW+W 2X9
CD-17	613 022 0943	HOLDER,TRANSISTOR
CD-18	613 022 2619	GEAR,IDLER
CD-19	613 022 1667	SPRING,GEAR MAIN
CD-20	613 022 2596	GEAR,MAIN
CD-21	613 022 0097	ASSY,GEAR,LEVER R
CD-22	613 022 1674	SPRING,LINK R
CD-24	613 022 4064	BOARD,UNDER
CD-27	613 124 5006	LEVER,SAFETY SW
CD-28	613 125 6149	SPRING,SAFETY SW
CD-31	411 001 8702	SCR BIN 3X6
MA-1	613 100 0391	ASSY,LEVER,TENSION
MA-2	613 085 7996	SPRING,LEVER TENSION
MA-3	613 021 9701	ASSY,HOLDER,BAND
MA-4	411 144 2803	SCR PAN+SW+W 2.6X6
MA-5	411 109 1605	WASHER Y 2.6X6X0.25
MA-6	613 135 7068	ASSY,REEL,SUPPLY
OR	613 135 7549	ASSY,REEL,SUPPLY
MA-7	613 135 7075	ASSY,REEL,TAKE UP
OR	613 143 2963	ASSY,REEL,TAKE UP
MA-8	412 021 5306	SPECIAL WASHER 3.1X6X0.3
OR	412 015 8900	SPECIAL WASHER 3.1X6X0.4
OR	412 015 8504	SPECIAL WASHER 3.1X6X0.5
MA-9	411 109 1506	WASHER Y 2.1X6X0.25
OR	411 109 1407	WASHER Y 2.1X5X0.25
MA-10	613 135 7150	GEAR,REEL SUPPLY
OR	613 142 9116	GEAR,REEL SUPPLY
MA-11	412 026 7305	SPECIAL WASHER 2.6X6X0.25
MA-12	613 135 7167	GEAR,REEL TAKE UP
OR	613 142 9109	GEAR,REEL TAKE UP
MA-15	412 042 4302	SPECIAL SCREW 2.6X4
MA-16	613 135 7099	COMPL,IDLER,CLUTCH
MA-17	411 120 1301	WASHER Y 2.1X4X0.25
MA-18	613 135 7082	ASSY,IDLER
MA-19	411 021 3107	SCR S-TPG BIN 2.6X8
MA-20	613 120 9053	COMPL PCB,MC-4
MA-21	407 016 7205	LED LN59
MA-22	613 021 9985	ASSY,SLIDE,ACT PLATE
MA-23	613 142 9086	SLIDE,C BRAKE
MA-24	613 022 1612	SPRING,RETURN SLIDE
MA-25	613 022 1506	SPRING,SUB T
MA-26	613 098 0106	ASSY,BRAKE SUB T
MA-27	613 077 3647	PULLEY,REEL
MA-28	613 022 1490	SPRING,SUB SUPPLY
MA-29	613 022 2374	SLIDE,ACT BRAKE
MA-30	613 084 8871	BRAKE,SUB SUPPLY
MA-31	613 022 0004	ASSY,SLIDE,M PLATE
MA-32	613 080 9216	ASSY,BRAKE,SUPPLY
MA-33	613 086 2914	SPRING,MAIN BRAKE
MA-34	613 080 9209	ASSY,BRAKE,TAKE UP
MA-35	411 109 3005	WASHER Y 2.6X5X0.5
MA-36	613 022 2015	LEVER,CONT PLATE
MA-37	412 015 9501	SPECIAL WASHER
MA-38	411 021 7907	SCR S-TPG BIN 4X12
MA-39	412 045 4606	SPECIAL WASHER 2.4X6X0.25



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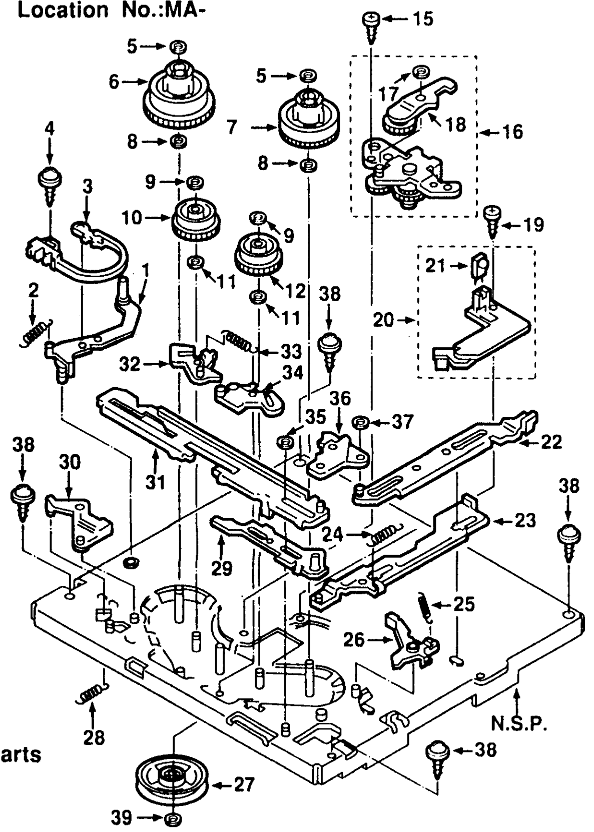
Location No.:MA-



N.S.P.:Not available as service parts

ELECTRICAL PARTS

NOTE;

1. Materials of Capacitors and Resistors are abbreviated as follows;

Resistors

MT-FILM	Metallized Film Resistor
MT-GLAZE	Metallized Glaze Resistor
OXIDE-MT	Oxide Metallized Film Resistor

Capacitors

MT-POLYEST	Metallized Polyester Capacitor
MT-COMPO	Metallized Composite Capacitor
TA-SOLID	Tantalum Solid Capacitor
AL-SOLID	Aluminum Solid Capacitor
NP-ELECT	Non-Polarized Electrolytic Capacitor
OS-SOLID	Aluminum Solid Capacitors with Organic Semiconductive Electrolytic Capacitor
DL-ELECT	Double Layered Electrolytic Capacitor

2. Tolerance of Capacitor(10pF over) and Resistor are noted with follow symboles.

F ············ ±1%　G ············ ±2%　J ············ ±5%　K ············ ±10%
M ············ ±20%　N ············ ±30%　Z ············ +80% ~ −20%

3. Capacitors

U : uF　P : pF

4. Inductors

UH : uH　MH : mH

5. N.S.P. : Not available as service parts.
6. The ceramic capacitors and resistors mounted on the PWB,may be two different types of parts,chip(leadless)type or discrete(with lead wire)type.Therefore,even though the location number is the same,you may encounter either chip or discrete parts on the PWB.

LOCATION	PARTS NO.	DESCRIPTION
COMPL PWB,CP-1-A		
COMPL.NO	613 158 6123	
(SEMICONDUCTORS)		
Q1002	405 057 6201	TR 2SC4038-Q
OR	405 057 6409	TR 2SC4038-R
OR	405 123 7002	TR 2SD1991A-Q
OR	405 123 7101	TR 2SD1991A-R
Q1003	405 064 0100	TR 2SA1561-Q
OR	405 064 0209	TR 2SA1561-R
OR	405 123 6708	TR 2SB1320A-Q
OR	405 123 6807	TR 2SB1320A-R
Q1004	405 064 0100	TR 2SA1561-Q
OR	405 064 0209	TR 2SA1561-R
OR	405 123 6708	TR 2SB1320A-Q
OR	405 123 6807	TR 2SB1320A-R
Q1006	405 057 6201	TR 2SC4038-Q
OR	405 057 6409	TR 2SC4038-R
OR	405 123 7002	TR 2SD1991A-Q
OR	405 123 7101	TR 2SD1991A-R
Q1011	405 063 9708	TR DTC144EL
OR	405 123 6500	TR UN6213
Q1012	405 057 6201	TR 2SC4038-Q
OR	405 057 6409	TR 2SC4038-R
OR	405 123 7002	TR 2SD1991A-Q
OR	405 123 7101	TR 2SD1991A-R
Q1151	405 063 9906	TR DTC124EL
OR	405 123 6401	TR UN6212
Q1152	405 063 9609	TR DTA114EL
OR	405 124 2709	TR UN6111
Q1301	405 063 9104	TR DTA144EL
OR	405 123 6609	TR UN6113
Q1312	405 057 6201	TR 2SC4038-Q
OR	405 057 6409	TR 2SC4038-R
OR	405 123 7002	TR 2SD1991A-Q
OR	405 123 7101	TR 2SD1991A-R
Q1313	405 063 9708	TR DTC144EL
OR	405 123 6500	TR UN6213
Q1601	405 004 4601	TR 2SA608-F-SPA
OR	405 006 1806	TR 2SA933S-R
Q1621	405 019 2005	TR 2SC536-E-SPA
OR	405 019 2807	TR 2SC536-F-SPA
OR	405 011 8401	TR 2SC1740S-Q
OR	405 011 8500	TR 2SC1740S-R
Q1621	405 093 0607	TR KSC2785-Y
Q1622	405 057 6201	TR 2SC4038-Q
OR	405 057 6409	TR 2SC4038-R
OR	405 123 7002	TR 2SD1991A-Q
OR	405 123 7101	TR 2SD1991A-R
Q1623	405 064 0100	TR 2SA1561-Q
OR	405 064 0209	TR 2SA1561-R
OR	405 123 6708	TR 2SB1320A-Q
OR	405 123 6807	TR 2SB1320A-R
Q1653	405 057 6201	TR 2SC4038-Q
OR	405 057 6409	TR 2SC4038-R
OR	405 123 7002	TR 2SD1991A-Q
OR	405 123 7101	TR 2SD1991A-R
Q1654	405 064 0100	TR 2SA1561-Q
OR	405 064 0209	TR 2SA1561-R
OR	405 123 6708	TR 2SB1320A-Q
OR	405 123 6807	TR 2SB1320A-R
Q3503	405 063 9708	TR DTC144EL
OR	405 123 6500	TR UN6213
Q3504	405 063 9708	TR DTC144EL
OR	405 123 6500	TR UN6213
Q3551	405 057 6201	TR 2SC4038-Q
OR	405 057 6409	TR 2SC4038-R
OR	405 123 7002	TR 2SD1991A-Q
OR	405 123 7101	TR 2SD1991A-R
Q3552	405 057 6201	TR 2SC4038-Q
OR	405 057 6409	TR 2SC4038-R
OR	405 123 7002	TR 2SD1991A-Q
OR	405 123 7101	TR 2SD1991A-R
Q3553	405 057 6201	TR 2SC4038-Q
OR	405 057 6409	TR 2SC4038-R
OR	405 123 7002	TR 2SD1991A-Q
OR	405 123 7101	TR 2SD1991A-R
Q5001	405 094 6905	TR 2SK1460
OR	405 126 0208	TR 2SK1460LS
Q5002	405 013 7006	TR 2SC2274-F
OR	405 013 7303	TR 2SC2274K-F
Q5003	405 006 6702	TR 2SA984-F
OR	405 006 7204	TR 2SA984K-F
Q5004	405 013 7006	TR 2SC2274-F
OR	405 013 7303	TR 2SC2274K-F
Q5101	405 013 7006	TR 2SC2274-F

LOCATION	PARTS NO.	DESCRIPTION
Q5101	405 013 7303	TR 2SC2274K-F
Q5102	405 013 7006	TR 2SC2274-F
OR	405 013 7303	TR 2SC2274K-F
Q5103	405 003 7603	TR 2SA1345
OR	405 000 2205	TR DTA144ES
Q5104	405 018 2501	TR 2SC3399
OR	405 000 6104	TR DTC144ES
Q6001	405 073 6407	TR 2SK772-E
OR	405 073 6506	TR 2SK772-F
OR	405 026 9004	TR 2SK222-D
OR	405 026 9103	TR 2SK222-E
OR	405 114 7806	TR 2SK1104-P
OR	405 114 7905	TR 2SK1104-Q
OR	405 114 8001	TR 2SK1104-R
Q6002	405 018 2501	TR 2SC3399
OR	405 000 6104	TR DTC144ES
Q6004	405 018 9500	TR 2SC3901
Q6005	405 003 7603	TR 2SA1345
OR	405 000 2205	TR DTA144ES
Q6006	405 018 2501	TR 2SC3399
OR	405 000 6104	TR DTC144ES
Q6008	405 019 2005	TR 2SC536-E-SPA
OR	405 011 8401	TR 2SC1740S-Q
OR	405 093 0607	TR KSC2785-Y
OR	405 019 2807	TR 2SC536-F-SPA
OR	405 011 8500	TR 2SC1740S-R
Q6051	405 004 4007	TR 2SA608-E-SPA
OR	405 006 1707	TR 2SA933S-Q
OR	405 093 0508	TR KSA1175-Y
OR	405 004 4601	TR 2SA608-F-SPA
OR	405 006 1806	TR 2SA933S-R
Q6052	405 057 6201	TR 2SC4038-Q
OR	405 057 6409	TR 2SC4038-R
OR	405 123 7002	TR 2SD1991A-Q
OR	405 123 7101	TR 2SD1991A-R
Q6901	405 019 2005	TR 2SC536-E-SPA
OR	405 011 8401	TR 2SC1740S-Q
OR	405 093 0607	TR KSC2785-Y
OR	405 019 2807	TR 2SC536-F-SPA
OR	405 011 8500	TR 2SC1740S-R
Q6902	405 004 4007	TR 2SA608-E-SPA
OR	405 006 1707	TR 2SA933S-Q
OR	405 093 0508	TR KSA1175-Y
OR	405 004 4601	TR 2SA608-F-SPA
OR	405 006 1806	TR 2SA933S-R
Q6903	405 019 2005	TR 2SC536-E-SPA
OR	405 011 8401	TR 2SC1740S-Q
OR	405 093 0607	TR KSC2785-Y
OR	405 019 2807	TR 2SC536-F-SPA
OR	405 011 8500	TR 2SC1740S-R
Q6904	405 018 2501	TR 2SC3399
OR	405 000 6104	TR DTC144ES
Q6921	405 084 8209	TR 2SC2960-F-SPA
OR	405 084 8308	TR 2SC2960-G-SPA
(INTEGRATED CIRCUITS)		
IC101	409 326 0204	IC LA7345AM
OR	409 333 9900	IC LA7345AM-MPB
IC111	409 297 6205	IC LC89925
IC161	409 003 4501	IC BA7021
OR	409 120 3401	IC LA7221
IC162	410 174 3200	IC LC74760M-8797
IC301	410 219 6302	IC LC866648V-5651
IC302	409 314 2005	IC LB1643
IC303	409 313 0903	IC MN1381-L
OR	409 243 4101	IC MN1380-L

LOCATION	PARTS NO.	DESCRIPTION
IC351	409 323 3109	IC BU2896K
IC511	409 067 7203	IC L5431
IC512	409 225 2309	IC PQ12RF11
IC602	410 177 3603	IC AT24C02-10PC
OR	409 283 6202	IC LE24C02S1
OR	409 247 7702	IC ST24C02AB1
OR	410 172 6807	IC X24C02P-C7189
IC692	409 026 8203	IC L5631
OR	409 057 5103	IC UPC574J
(DIODES)		
D1003	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D1004	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D1008	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D1009	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D1301	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D1601	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D1602	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D1611	407 070 7104	ZENER DIODE GZS5.6X
OR	407 053 6704	ZENER DIODE MTZ5.6B
D1612	407 070 7104	ZENER DIODE GZS5.6X
OR	407 053 6704	ZENER DIODE MTZ5.6B
D1621	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D1622	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D1671	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D1699	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D3001	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D3102	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D3104	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D3105	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D3106	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D3107	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D3111	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D3113	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D3121	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D3122	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D3123	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D3502	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D3510	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133
D3554	407 007 9904	DIODE GMA01
OR	407 012 4406	DIODE 1SS133

LOCATION	PARTS NO.	DESCRIPTION
D5001	407 134 8900	DIODE DBC10G
D5003	407 078 2705	DIODE 1SS244
D5004	407 078 2705	DIODE 1SS244
D5006	407 078 2705	DIODE 1SS244
D5010	407 091 6704	DIODE AP01C
D5013 ⚠	407 151 3308	PHOTO COUPLE PC120FB
D5101	407 169 5806	DIODE RK36-LF-C4
D5102	407 169 5707	DIODE RL2Z-LF-C4
D5103	407 078 2705	DIODE 1SS244
D5104	407 078 2705	DIODE 1SS244
D5105	407 100 6909	DIODE AG01
D5108	407 063 8903	ZENER DIODE MTZJ5.6C
D5109	407 063 8903	ZENER DIODE MTZJ5.6C
D5110	407 004 9709	DIODE DSK10C
OR	407 005 8701	DIODE ERA15-02
D5112	407 063 8903	ZENER DIODE MTZJ5.6C
D6901	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D6902	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
D6903	407 012 4406	DIODE 1SS133
OR	407 007 9904	DIODE GMA01
(CRYSTAL DEVICES)		
X1001	645 000 6012	OSC,CRYSTAL 4.433619MHZ
OR	645 000 6029	OSC,CRYSTAL 4.433619MHZ
OR	645 002 4436	OSC,CRYSTAL 4.433619MHZ
X1621	613 002 8709	CRYSTAL 17.734475MHZ
OR	613 127 1555	OSC,CRYSTAL 17.734475MHZ
X3001	645 003 5852	OSC,CERAMIC 13.31MHZ
OR	645 003 4510	OSC,CERAMIC 13.31MHZ
X3002	613 109 0972	OSC,CRYSTAL 32KHZ
OR	613 123 6387	OSC,CRYSTAL 32.768KHZ
(VARIABLE RESISTORS)		
VR101	613 120 8438	VR,SEMI 22KB
OR	613 120 8582	VR,SEMI 22KB
VR102	613 120 8421	VR,SEMI 2.2KB
OR	613 120 8575	VR,SEMI 2.2KB
VR103	613 147 7216	VR,SEMI 6.8KB
OR	613 147 7223	VR,SEMI 6.8KB
VR104	613 079 2532	VR,SEMI 10KB
OR	613 120 8544	VR,SEMI 10KB
VR351	613 117 1732	VR,SEMI 220KB
OR	613 002 0482	SEMI VR 220KB
(TRIMMER)		
CT120	613 002 6378	TRIMMER
(INDUCTORS)		
L1002	613 014 0739	COIL,INDUCTOR 1.0UHK
OR	613 014 4256	HF CHOKE 1.0UHM
L1004	613 014 0999	COIL,INDUCTOR 150UHK
OR	613 014 4515	HF CHOKE 150UHK
L1005	613 014 0999	COIL,INDUCTOR 150UHK
OR	613 014 4515	HF CHOKE 150UHK
L1007	613 014 0883	COIL,INDUCTOR 18UHK
OR	613 014 4409	HF CHOKE 18UHK
L1008	613 014 0876	COIL,INDUCTOR 15UHK
OR	613 014 4393	HF CHOKE 15UHK
L1009	613 014 0777	COIL,INDUCTOR 2.2UHK
OR	613 014 4294	HF CHOKE 2.2UHM
L1010	613 014 0906	COIL,INDUCTOR 27UHK
OR	613 014 4423	HF CHOKE 27UHK
L1012	613 014 1156	COIL,INDUCTOR 39UHJ
OR	613 014 4676	HF CHOKE 39UHJ
L1013	613 014 0913	COIL,INDUCTOR 33UHK
OR	613 014 4430	HF CHOKE 33UHK
L1081	613 014 0975	COIL,INDUCTOR 100UHK
OR	613 014 4492	HF CHOKE 101UHK
L1101	613 014 1019	COIL,INDUCTOR 220UHK
OR	613 014 4539	HF CHOKE 220UHK
L1622	613 014 0821	COIL,INDUCTOR 5.6UHK
OR	613 014 4348	HF CHOKE 5.6UHK
L3001	645 000 4070	CORE,BEAD
OR	613 017 0408	CORE
L5001 ⚠	645 002 1886	LINE FILTER
L5010	613 107 6884	FERRITE CORE
L5101	613 107 6884	FERRITE CORE
L5102	613 107 6884	FERRITE CORE
L6008	613 014 0852	COIL,INDUCTOR 10UHK
OR	613 014 4379	HF CHOKE 10UHK
L6009	613 015 6082	COIL,INDUCTOR 10UHJ
L6051	613 014 0975	COIL,INDUCTOR 100UHK
OR	613 014 4492	HF CHOKE 101UHK
L6604	613 014 0739	COIL,INDUCTOR 1.0UHK
OR	613 014 4256	HF CHOKE 1.0UHM
L6606	613 014 0821	COIL,INDUCTOR 5.6UHK
OR	613 014 4348	HF CHOKE 5.6UHK
(TRANSFORMER)		
T5001 ⚠	645 004 6308	TRANS,POWER,PULSE
(DELAY LINES)		
DL101	645 000 5992	DELAY LINE(COMB)
OR	645 000 6005	DELAY LINE(COMB)

(CAPACITORS)

C1002	403 072 4202	CERAMIC	270P	J	50V
C1003	403 068 8801	CERAMIC	100P	J	50V
C1005	403 139 2707	ELECT	1U	M	50V
C1006	403 025 7304	CERAMIC	4.7P	K	50V
C1007	403 073 2702	CERAMIC	390P	J	50V
C1008	403 017 9705	CERAMIC	22P	J	50V
C1009	403 025 7304	CERAMIC	4.7P	K	50V
C1010	403 075 3103	CERAMIC	82P	J	50V
C1011	403 139 2707	ELECT	1U	M	50V
C1012	403 139 1502	ELECT	10U	M	16V
C1013	403 139 2608	ELECT	0.47U	M	50V
C1014	403 001 1906	CERAMIC	0.01U	M	16V
C1015	403 120 9203	CERAMIC	0.033U	J	16V
C1016	403 120 9005	CERAMIC	0.022U	J	16V
C1021	403 073 2702	CERAMIC	390P	J	50V
C1022	403 217 5507	CERAMIC	0.1U	J	16V
C1023	403 030 6309	CERAMIC	68P	J	50V
C1028	403 001 1906	CERAMIC	0.01U	M	16V
C1030	403 191 8709	ELECT	1U	M	50V
C1031	403 191 8709	ELECT	1U	M	50V
C1032	403 120 9609	CERAMIC	0.047U	J	16V
C1033	403 001 1906	CERAMIC	0.01U	M	16V
C1036	403 191 8709	ELECT	1U	M	50V
C1037	403 191 8808	ELECT	2.2U	M	50V
C1038	403 120 9005	CERAMIC	0.022U	J	16V
C1039	403 120 9609	CERAMIC	0.047U	J	16V
C1040	403 001 1906	CERAMIC	0.01U	M	16V
C1041	403 189 2405	ELECT	10U	M	16V
C1043	403 121 9509	CERAMIC	0.1U	Z	50V
C1044	403 163 7907	ELECT	47U	M	6.3V
C1046	403 139 1502	ELECT	10U	M	16V
C1047	403 139 1502	ELECT	10U	M	16V
C1048	403 001 1906	CERAMIC	0.01U	M	16V
C1049	403 022 7703	CERAMIC	33P	J	50V

LOCATION	PARTS NO.	DESCRIPTION			
C1050	403 001 1906	CERAMIC	0.01U	M	16V
C1051	403 073 6205	CERAMIC	470P	J	50V
C1052	403 115 0901	CERAMIC	560P	J	50V
C1053	403 001 1906	CERAMIC	0.01U	M	16V
C1058	403 019 9703	CERAMIC	27P	J	50V
C1060	403 022 7703	CERAMIC	33P	J	50V
C1061	403 026 2209	CERAMIC	47P	J	50V
C1062	403 071 1509	CERAMIC	180P	J	50V
C1081	403 074 8703	CERAMIC	680P	J	50V
C1091	403 121 9509	CERAMIC	0.1U	Z	50V
C1093	403 121 9509	CERAMIC	0.1U	Z	50V
C1094	403 121 9509	CERAMIC	0.1U	Z	50V
C1096	403 121 9509	CERAMIC	0.1U	Z	50V
C1097	403 154 3307	OS-SOLID	4.7U	M	10V
C1101	403 139 1007	ELECT	47U	M	6.3V
C1102	403 001 1906	CERAMIC	0.01U	M	16V
C1105	403 010 7807	CERAMIC	12P	J	50V
C1109	403 001 1906	CERAMIC	0.01U	M	16V
C1110	403 139 2707	ELECT	1U	M	50V
C1311	403 121 9509	CERAMIC	0.1U	Z	50V
C1601	403 121 9509	CERAMIC	0.1U	Z	50V
C1602	403 223 9308	ELECT	470U	M	6.3V
C1611	403 193 8608	ELECT	0.47U	M	50V
C1613	403 222 1105	CERAMIC	0.047U	Z	16V
C1614	403 139 1502	ELECT	10U	M	16V
C1621	403 012 6006	CERAMIC	15P	J	50V
C1622	403 012 6006	CERAMIC	15P	J	50V
C1623	403 163 7907	ELECT	47U	M	6.3V
C1624	403 167 6609	ELECT	47U	M	10V
C1625	403 189 2405	ELECT	10U	M	16V
C1627	403 213 0605	CERAMIC	1200P	K	16V
C1628	403 191 8709	ELECT	1U	M	50V
C1630	403 119 7104	CERAMIC	6800P	K	16V
C1631	403 086 2805	NP-ELECT	1U	M	50V
C1632	403 138 2500	CERAMIC	0.022U	K	16V
C1633	403 019 0403	CERAMIC	24P	J	50V
C1634	403 009 1809	CERAMIC	10P	J	50V
C1636	403 001 1906	CERAMIC	0.01U	M	16V
C3001	403 009 1700	CERAMIC	10P	J	50V
C3002	403 017 0108	CERAMIC	20P	J	50V
C3004	403 001 1906	CERAMIC	0.01U	M	16V
C3005	403 001 1906	CERAMIC	0.01U	M	16V
C3008	403 150 6500	ELECT	22U	M	16V
C3009	403 001 1906	CERAMIC	0.01U	M	16V
C3010	403 191 8808	ELECT	2.2U	M	50V
C3011	403 121 9509	CERAMIC	0.1U	Z	50V
C3012	403 001 1906	CERAMIC	0.01U	M	16V
C3013	403 001 1906	CERAMIC	0.01U	M	16V
C3014	403 223 9308	ELECT	470U	M	6.3V
C3016	403 001 1906	CERAMIC	0.01U	M	16V
C3017	403 069 1207	CERAMIC	1000P	K	50V
C3021	403 026 2209	CERAMIC	47P	J	50V
C3022	403 265 4408	DL-ELECT	0.1F	Z	5.5V
C3023	403 010 7708	CERAMIC	12P	J	50V
C3501	403 129 9709	CERAMIC	0.015U	K	16V
C3502	403 001 8806	CERAMIC	6800P	K	16V
C3503	403 129 9709	CERAMIC	0.015U	K	16V
C3505	403 150 6500	ELECT	22U	M	16V
C3506	403 001 8806	CERAMIC	6800P	K	16V
C3508	403 150 6500	ELECT	22U	M	16V
C3509	403 163 7907	ELECT	47U	M	6.3V
C3511	403 071 6207	CERAMIC	220P	K	50V
C3512	403 270 2307	MT-COMPO	0.039U	J	50V
C3513	403 119 6701	CERAMIC	0.068U	K	16V
C3514	403 058 5308	POLYESTER	0.15U	K	50V
C3515	403 059 6007	POLYESTER	0.022U	K	50V
C3516	403 001 5003	CERAMIC	2200P	K	16V

LOCATION	PARTS NO.	DESCRIPTION			
C3517	403 001 3801	CERAMIC	1500P	K	16V
C3522	403 069 1207	CERAMIC	1000P	K	50V
C3523	403 191 8709	ELECT	1U	M	50V
C3524	403 001 1906	CERAMIC	0.01U	M	16V
C3525	403 193 8608	ELECT	0.47U	M	50V
C3526	403 184 9607	MT-POLYEST	0.082U	J	50V
C3530	403 163 7907	ELECT	47U	M	6.3V
C3536	403 193 7601	ELECT	220U	M	6.3V
C3540	403 068 9402	CERAMIC	100P	K	50V
C3551	403 263 5605	MT-COMPO	0.12U	J	50V
C3552	403 028 3402	CERAMIC	56P	J	50V
C3553	403 191 8709	ELECT	1U	M	50V
C3554	403 070 7205	CERAMIC	150P	J	50V
C3556	403 069 1207	CERAMIC	1000P	K	50V
C3558	403 149 0700	ELECT	33U	M	16V
C3570	403 121 9509	CERAMIC	0.1U	Z	50V
C5001 ⚠	404 055 5001	MT-POLYEST	0.22U	M	250V
C5002 ⚠	404 055 4905	MT-POLYEST	0.068U	M	250V
C5005 ⚠	404 032 8704	CERAMIC	2200P	M	400V
C5007 ⚠	404 032 8704	CERAMIC	2200P	M	400V
C5010	403 249 0204	ELECT	47U	M	400V
C5011	403 057 3107	POLYESTER	0.1U	K	50V
C5015	403 060 6201	POLYESTER	3300P	K	50V
C5017	403 073 2702	CERAMIC	390P	J	50V
C5020	403 137 5007	CERAMIC	100P	K	1K
C5021	403 076 0507	CERAMIC	2200P	K	500V
C5022	403 076 0507	CERAMIC	2200P	K	500V
C5023	403 026 2209	CERAMIC	47P	J	50V
C5025	403 137 5007	CERAMIC	100P	K	1K
C5101	403 243 8107	ELECT	1000U	M	6.3V
C5102	403 147 9200	ELECT	1000U	M	6.3V
C5105	403 207 5005	ELECT	470U	M	16V
C5106	403 218 3106	ELECT	1000U	M	16V
C5108	403 209 4709	ELECT	22U	M	50V
C5109	403 228 9600	ELECT	47U	M	35V
C5110	403 243 7803	ELECT	220U	M	6.3V
C5113	403 201 5001	ELECT	330U	M	16V
C5116	403 248 3107	ELECT	3.3U	M	50V
C5124	403 258 3807	ELECT	0.22U	M	50V
C5135	403 057 3107	POLYESTER	0.1U	K	50V
C6004	403 243 6806	MT-COMPO	0.1U	J	50V
C6005	403 121 9509	CERAMIC	0.1U	Z	50V
C6006	403 222 1105	CERAMIC	0.047U	Z	16V
C6007	403 189 2405	ELECT	10U	M	16V
C6008	403 228 6401	CERAMIC	0.033U	Z	16V
C6009	403 248 1608	ELECT	47U	M	16V
C6010	403 001 5102	CERAMIC	2200P	M	16V
C6052	403 024 1501	CERAMIC	39P	J	50V
C6053	403 022 7703	CERAMIC	33P	J	50V
C6054	403 248 2001	ELECT	4.7U	M	25V
C6055	403 248 2001	ELECT	4.7U	M	25V
C6056	403 073 3204	CERAMIC	390P	K	50V
C6099	403 073 7004	CERAMIC	470P	K	50V
C6601	403 248 1905	ELECT	10U	M	16V
C6602	403 248 1905	ELECT	10U	M	16V
C6901	403 248 1400	ELECT	1U	M	50V
C6903	403 001 1906	CERAMIC	0.01U	M	16V
C6905	403 017 9705	CERAMIC	22P	J	50V
C6907	403 191 8709	ELECT	1U	M	50V
C6909	403 193 7809	ELECT	100U	M	16V
C6910	403 069 1207	CERAMIC	1000P	K	50V
C6922	403 233 1101	ELECT	22U	M	50V
C6924	403 071 2001	CERAMIC	180P	K	50V
C6925	403 256 4608	MT-COMPO	0.33U	J	50V
C6926	403 263 5704	MT-COMPO	0.22U	J	50V

(RESISTORS)

LOCATION	PARTS NO.	DESCRIPTION
R1001	401 018 3708	CARBON 3.3K JA 1/4W
R1002	401 012 5609	CARBON 1K JA 1/4W
R1003	401 019 1802	CARBON 3.9K JA 1/4W
R1004	401 012 5609	CARBON 1K JA 1/4W
R1005	401 017 0708	CARBON 270 JA 1/4W
R1006	401 023 1607	CARBON 820 JA 1/4W
R1007	401 012 5609	CARBON 1K JA 1/4W
R1008	401 017 1705	CARBON 2.7K JA 1/4W
R1009	401 022 1806	CARBON 680 JA 1/4W
R1010	401 016 3700	CARBON 2.2K JA 1/4W
R1012	401 012 5609	CARBON 1K JA 1/4W
R1013	401 012 5609	CARBON 1K JA 1/4W
R1014	401 016 3700	CARBON 2.2K JA 1/4W
R1019	401 016 4707	CARBON 22K JA 1/4W
R1020	401 013 6308	CARBON 12K JA 1/4W
R1021	401 012 5609	CARBON 1K JA 1/4W
R1022	401 019 0904	CARBON 390 JA 1/4W
R1024	401 012 5609	CARBON 1K JA 1/4W
R1026	401 012 9201	CARBON 1M JA 1/4W
R1027	401 023 2703	CARBON 8.2K JA 1/4W
R1028	401 015 2605	CARBON 1.8K JA 1/4W
R1029	401 012 5609	CARBON 1K JA 1/4W
R1032	401 016 4707	CARBON 22K JA 1/4W
R1033	401 012 5609	CARBON 1K JA 1/4W
R1035	401 020 0702	CARBON 470 JA 1/4W
R1036	401 014 4006	CARBON 1.5K JA 1/4W
R1038	401 012 5609	CARBON 1K JA 1/4W
R1040	401 014 2804	CARBON 150 JA 1/4W
R1043	401 016 3700	CARBON 2.2K JA 1/4W
R1044	401 013 6308	CARBON 12K JA 1/4W
R1046	401 018 4804	CARBON 33K JA 1/4W
R1047	401 023 2703	CARBON 8.2K JA 1/4W
R1048	401 020 1907	CARBON 4.7K JA 1/4W
R1049	401 013 6308	CARBON 12K JA 1/4W
R1052	401 012 5609	CARBON 1K JA 1/4W
R1053	401 018 2701	CARBON 330 JA 1/4W
R1054	401 018 3708	CARBON 3.3K JA 1/4W
R1059	401 015 2605	CARBON 1.8K JA 1/4W
R1063	401 016 4707	CARBON 22K JA 1/4W
R1071	401 017 1705	CARBON 2.7K JA 1/4W
R1072	401 015 2605	CARBON 1.8K JA 1/4W
R1105	401 019 1802	CARBON 3.9K JA 1/4W
R1106	401 022 3008	CARBON 6.8K JA 1/4W
R1601	401 021 1807	CARBON 560 JA 1/4W
R1602	401 022 6702	CARBON 75 JA 1/4W
R1603	401 015 0403	CARBON 18 JA 1/4W
R1611	401 012 5609	CARBON 1K JA 1/4W
R1612	401 012 5609	CARBON 1K JA 1/4W
R1614	401 012 5609	CARBON 1K JA 1/4W
R1616	401 018 2701	CARBON 330 JA 1/4W
R1617	401 019 0904	CARBON 390 JA 1/4W
R1621	401 016 4707	CARBON 22K JA 1/4W
R1622	401 019 7705	CARBON 4.3K JA 1/4W
R1623	401 014 4006	CARBON 1.5K JA 1/4W
R1624	401 012 6903	CARBON 10K JA 1/4W
R1625	401 022 3008	CARBON 6.8K JA 1/4W
R1626	401 012 8006	CARBON 100K JA 1/4W
R1627	401 016 2505	CARBON 220 JA 1/4W
R1628	401 012 4404	CARBON 100 JA 1/4W
R1629	401 016 2505	CARBON 220 JA 1/4W
R1630	401 014 4006	CARBON 1.5K JA 1/4W
R1631	401 022 3008	CARBON 6.8K JA 1/4W
R1632	401 012 5609	CARBON 1K JA 1/4W
R1633	401 012 5609	CARBON 1K JA 1/4W
R1651	401 023 2703	CARBON 8.2K JA 1/4W
R1652	401 013 6308	CARBON 12K JA 1/4W
R1653	401 021 0602	CARBON 56 JA 1/4W
R1656	401 012 6903	CARBON 10K JA 1/4W

LOCATION	PARTS NO.	DESCRIPTION
R1657	401 021 2903	CARBON 5.6K JA 1/4W
R1658	401 021 2903	CARBON 5.6K JA 1/4W
R1659	401 012 6903	CARBON 10K JA 1/4W
R1671	401 012 4404	CARBON 100 JA 1/4W
R1673	401 020 1907	CARBON 4.7K JA 1/4W
R3001 ⚠	402 067 7402	FUSIBLE RES 3.3 JA 1/2W
R3004	401 014 4006	CARBON 1.5K JA 1/4W
R3008	401 020 1907	CARBON 4.7K JA 1/4W
R3009	401 020 1907	CARBON 4.7K JA 1/4W
R3010	401 020 1907	CARBON 4.7K JA 1/4W
R3011	401 020 2805	CARBON 47K JA 1/4W
R3012	401 020 1907	CARBON 4.7K JA 1/4W
R3013	401 020 1907	CARBON 4.7K JA 1/4W
R3014	401 016 0402	CARBON 200K JA 1/4W
R3015	401 016 0402	CARBON 200K JA 1/4W
R3018	401 012 6903	CARBON 10K JA 1/4W
R3019	401 018 8307	CARBON 36K JA 1/4W
R3020	401 012 6903	CARBON 10K JA 1/4W
R3023	401 012 5609	CARBON 1K JA 1/4W
R3024	401 012 5609	CARBON 1K JA 1/4W
R3025	401 012 5609	CARBON 1K JA 1/4W
R3026	401 012 5609	CARBON 1K JA 1/4W
R3032	401 018 4804	CARBON 33K JA 1/4W
R3034	401 013 6308	CARBON 12K JA 1/4W
R3035	401 012 6903	CARBON 10K JA 1/4W
R3036	401 012 6903	CARBON 10K JA 1/4W
R3046	401 020 1907	CARBON 4.7K JA 1/4W
R3047	401 015 9406	CARBON 2K JA 1/4W
R3048	401 013 9408	CARBON 1.3K JA 1/4W
R3049	401 017 1705	CARBON 2.7K JA 1/4W
R3050	401 016 0006	CARBON 20K JA 1/4W
R3051	401 016 0006	CARBON 20K JA 1/4W
R3101	401 012 8006	CARBON 100K JA 1/4W
R3102	401 012 8006	CARBON 100K JA 1/4W
R3103	401 012 8006	CARBON 100K JA 1/4W
R3104	401 012 8006	CARBON 100K JA 1/4W
R3501	401 012 8006	CARBON 100K JA 1/4W
R3502	401 012 8006	CARBON 100K JA 1/4W
R3503	401 018 5702	CARBON 330K JA 1/4W
R3504	401 014 6000	CARBON 150K JA 1/4W
R3505	401 014 5102	CARBON 15K JA 1/4W
R3506	401 016 5704	CARBON 220K JA 1/4W
R3507	401 014 6000	CARBON 150K JA 1/4W
R3508	401 017 2702	CARBON 27K JA 1/4W
R3516	401 023 7401	CARBON 9.1K JA 1/4W
R3517	401 020 2805	CARBON 47K JA 1/4W
R3518	401 020 2805	CARBON 47K JA 1/4W
R3520	401 019 3905	CARBON 390K JA 1/4W
R3521	401 012 6903	CARBON 10K JA 1/4W
R3525	401 012 5609	CARBON 1K JA 1/4W
R3526	401 016 3700	CARBON 2.2K JA 1/4W
R3527	401 012 5609	CARBON 1K JA 1/4W
R3528	401 020 7800	CARBON 510 JA 1/4W
R3529	401 020 7800	CARBON 510 JA 1/4W
R3533	401 014 4006	CARBON 1.5K JA 1/4W
R3537	401 023 2703	CARBON 8.2K JA 1/4W
R3546	401 020 1907	CARBON 4.7K JA 1/4W
R3547	401 014 5102	CARBON 15K JA 1/4W
R3549	401 012 6903	CARBON 10K JA 1/4W
R3550	401 023 2703	CARBON 8.2K JA 1/4W
R3551	401 012 6903	CARBON 10K JA 1/4W
R3552	401 012 8006	CARBON 100K JA 1/4W
R3553	401 016 5704	CARBON 220K JA 1/4W
R3555	401 012 8006	CARBON 100K JA 1/4W
R3556	401 012 6903	CARBON 10K JA 1/4W
R3557	401 018 5702	CARBON 330K JA 1/4W
R3558	401 020 0702	CARBON 470 JA 1/4W

LOCATION	PARTS NO.	DESCRIPTION
R3560	401 012 5609	CARBON 1K JA 1/4W
R5001	402 013 9108	SOLID 2.7M KB 1/2W
R5002	401 020 3802	CARBON 470K JA 1/4W
R5003	401 020 3802	CARBON 470K JA 1/4W
R5005	401 015 4609	CARBON 180K JA 1/4W
R5006	401 012 6903	CARBON 10K JA 1/4W
R5007	401 012 6903	CARBON 10K JA 1/4W
R5008	401 020 3802	CARBON 470K JA 1/4W
R5009	401 021 4006	CARBON 56K JA 1/4W
R5012	401 015 2605	CARBON 1.8K JA 1/4W
R5014	401 019 9501	CARBON 47 JA 1/4W
R5020	401 014 5102	CARBON 15K JA 1/4W
R5021	401 014 5102	CARBON 15K JA 1/4W
R5022	401 014 5102	CARBON 15K JA 1/4W
R5101	401 018 2701	CARBON 330 JA 1/4W
R5102	401 020 0702	CARBON 470 JA 1/4W
R5103	401 021 1807	CARBON 560 JA 1/4W
R5104	401 017 1705	CARBON 2.7K JA 1/4W
R5111	401 021 1807	CARBON 560 JA 1/4W
R5112	401 018 7904	CARBON 3.6K JA 1/4W
R5114	401 012 4404	CARBON 100 JA 1/4W
R5115	401 022 7105	CARBON 750 JA 1/4W
R5116	401 021 1807	CARBON 560 JA 1/4W
R5120	401 019 6104	CARBON 4.7 JA 1/4W
R5121	401 023 6206	CARBON 9.1 JA 1/4W
R5123	401 017 1705	CARBON 2.7K JA 1/4W
R5135	401 022 1806	CARBON 680 JA 1/4W
R6001	401 019 3905	CARBON 390K JA 1/4W
R6002	401 017 3709	CARBON 270K JA 1/4W
R6003	401 019 3905	CARBON 390K JA 1/4W
R6004	401 020 3802	CARBON 470K JA 1/4W
R6006	401 018 3708	CARBON 3.3K JA 1/4W
R6008	401 012 9201	CARBON 1M JA 1/4W
R6009	401 020 1907	CARBON 4.7K JA 1/4W
R6051	401 021 1807	CARBON 560 JA 1/4W
R6052	401 015 2605	CARBON 1.8K JA 1/4W
R6053	401 012 5609	CARBON 1K JA 1/4W
R6054	401 023 1607	CARBON 820 JA 1/4W
R6055	401 021 2903	CARBON 5.6K JA 1/4W
R6056	401 015 2605	CARBON 1.8K JA 1/4W
R6057	401 013 9408	CARBON 1.3K JA 1/4W
R6061	401 012 8006	CARBON 100K JA 1/4W
R6062	401 023 7807	CARBON 91K JA 1/4W
R6063	401 023 7807	CARBON 91K JA 1/4W
R6064	401 016 3700	CARBON 2.2K JA 1/4W
R6065	401 012 6903	CARBON 10K JA 1/4W
R6071 ⚠	402 042 0701	FUSIBLE RES 680 GA 1/4W
R6691	401 016 3700	CARBON 2.2K JA 1/4W
R6692	401 018 3708	CARBON 3.3K JA 1/4W
R6901	401 012 4404	CARBON 100 JA 1/4W
R6902	401 012 5609	CARBON 1K JA 1/4W
R6903	401 012 8006	CARBON 100K JA 1/4W
R6905	401 022 1806	CARBON 680 JA 1/4W
R6906	401 019 3905	CARBON 390K JA 1/4W
R6909	401 012 5609	CARBON 1K JA 1/4W
R6910	401 017 2702	CARBON 27K JA 1/4W
R6911	401 012 5609	CARBON 1K JA 1/4W
R6914	401 021 2903	CARBON 5.6K JA 1/4W
R6915	401 019 1802	CARBON 3.9K JA 1/4W
R6916	401 012 4404	CARBON 100 JA 1/4W
R6921	401 018 4804	CARBON 33K JA 1/4W
R6922	401 012 6903	CARBON 10K JA 1/4W
R6923	401 012 6903	CARBON 10K JA 1/4W
R6924	401 015 3701	CARBON 18K JA 1/4W
R6925	401 014 5102	CARBON 15K JA 1/4W
R6926	401 013 6308	CARBON 12K JA 1/4W
R6927	401 013 4106	CARBON 120 JA 1/4W

LOCATION	PARTS NO.	DESCRIPTION
(SWITCHES)		
S3101	645 000 3363	SWITCH,PUSH,REW
OR	613 139 4308	SW,PUSH,REW
S3102	645 000 3363	SWITCH,PUSH,PLAY
OR	613 139 4308	SW,PUSH,PLAY
S3103	645 000 3363	SWITCH,PUSH,REC
OR	613 139 4308	SW,PUSH,REC
S3104	645 000 3363	SWITCH,PUSH,EJECT
OR	613 139 4308	SW,PUSH,EJECT
S3105	645 000 3363	SWITCH,PUSH,FF
OR	613 139 4308	SW,PUSH,FF
S3106	645 000 3363	SWITCH,PUSH,STOP
OR	613 139 4308	SW,PUSH,STOP
S3107	645 000 3363	SWITCH,PUSH,PAUSE/WIDE ASO
OR	613 139 4308	SW,PUSH,PAUSE/WIDE ASO
S3108	645 000 3363	SWITCH,PUSH,POWER
OR	613 139 4308	SW,PUSH,POWER
S3117	645 000 3363	SWITCH,PUSH,CH +
OR	613 139 4308	SW,PUSH,CH +
S3118	645 000 3363	SWITCH,PUSH,CH -
OR	613 139 4308	SW,PUSH,CH -
(FUSE)		
F5001 ⚠	423 022 6506	FUSE 250V 2.5A
(PROTECTOR)		
PR511 ⚠	613 000 2303	CIRCUIT PROTECTOR
(CONNECTOR)		
CN501 ⚠	645 000 5411	SOCKET,INLET AC
(MISCELLANEOUS)		
	613 053 8055	FIXER
	613 136 4547	HOLDER,FUSE,F5001
OR	613 136 4554	HOLDER,FUSE,F5001

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COMPL PWB,VP-1

COMPL.NO 613 154 8015

LOCATION	PARTS NO.	DESCRIPTION
(SEMICONDUCTORS)		
Q1802	405 015 8407	TR 2SC2812-L5
OR	405 015 8704	TR 2SC2812-L6
OR	405 014 4509	TR 2SC2412K-R
OR	405 014 4608	TR 2SC2412K-S
Q1850	405 002 6508	TR 2SA1179-M5
OR	405 002 6706	TR 2SA1179-M6
OR	405 002 0308	TR 2SA1037K-R
OR	405 002 0407	TR 2SA1037K-S
Q1851	405 015 9701	TR 2SC2814-F4
OR	405 015 9909	TR 2SC2814-F5
OR	405 035 6100	TR 2SC2413K-Q
Q1852	405 015 9701	TR 2SC2814-F4
OR	405 015 9909	TR 2SC2814-F5
OR	405 035 6100	TR 2SC2413K-Q
Q2901	405 015 8407	TR 2SC2812-L5
OR	405 015 8704	TR 2SC2812-L6
OR	405 014 4509	TR 2SC2412K-R
OR	405 014 4608	TR 2SC2412K-S
(INTEGRATED CIRCUITS)		
IC181	409 262 2003	IC LA7374
IC291	409 132 0801	IC LA7270

LOCATION	PARTS NO.	DESCRIPTION			
(DIODES)					
D1801	407 007 9904	DIODE GMA01			
OR	407 012 4406	DIODE 1SS133			
(VARIABLE RESISTORS)					
VR181	613 117 1664	VR,SEMI 1KB			
OR	613 002 0345	SEMI VR 1KB			
VR182	613 117 1718	VR,SEMI 2.2KB			
OR	613 002 0369	SEMI VR 2.2KB			
(INDUCTORS)					
L1831	613 014 0838	COIL,INDUCTOR 6.8UHK			
OR	613 014 4355	HF CHOKE 6.8UHK			
L1832	613 014 0890	COIL,INDUCTOR 22UHK			
OR	613 014 4416	HF CHOKE 22UHK			
L1833	613 014 0968	COIL,INDUCTOR 82UHK			
OR	613 014 4485	HF CHOKE 82UHK			
L1834	613 014 0951	COIL,INDUCTOR 68UHK			
OR	613 014 4478	HF CHOKE 68UHK			
L1851	613 014 0821	COIL,INDUCTOR 5.6UHK			
OR	613 014 4348	HF CHOKE 5.6UHK			
L1852	613 014 0944	COIL,INDUCTOR 56UHK			
OR	613 014 4461	HF CHOKE 56UHK			
L1853	613 014 0876	COIL,INDUCTOR 15UHK			
OR	613 014 4393	HF CHOKE 15UHK			
L1854	613 014 0876	COIL,INDUCTOR 15UHK			
OR	613 014 4393	HF CHOKE 15UHK			
(CAPACITORS)					
C1801	403 154 3307	OS-SOLID	4.7U	M	10V
C1802	403 069 5601	CERAMIC	0.01U	K	50V
C1803	403 070 9803	CERAMIC	0.015U	K	50V
C1804	403 069 5601	CERAMIC	0.01U	K	50V
C1805	403 193 8509	ELECT	0.33U	M	50V
C1806	403 069 5601	CERAMIC	0.01U	K	50V
C1808	403 069 5601	CERAMIC	0.01U	K	50V
C1809	403 069 5601	CERAMIC	0.01U	K	50V
C1810	403 069 5601	CERAMIC	0.01U	K	50V
C1811	403 069 5601	CERAMIC	0.01U	K	50V
C1812	403 069 5601	CERAMIC	0.01U	K	50V
C1813	403 069 5601	CERAMIC	0.01U	K	50V
C1814	403 069 5601	CERAMIC	0.01U	K	50V
C1815	403 068 0409	CERAMIC	0.1U	Z	25V
C1816	403 068 0409	CERAMIC	0.1U	Z	25V
C1817	403 068 0409	CERAMIC	0.1U	Z	25V
C1818	403 068 0409	CERAMIC	0.1U	Z	25V
C1831	403 028 4201	CERAMIC	56P	J	50V
C1832	403 020 0508	CERAMIC	27P	J	50V
C1833	403 023 4503	CERAMIC	330P	J	50V
C1834	403 024 7206	CERAMIC	390P	J	50V
C1835	403 033 4609	CERAMIC	82P	J	50V
C1851	403 069 5601	CERAMIC	0.01U	K	50V
C1852	403 022 8304	CERAMIC	33P	J	50V
C1853	403 022 8304	CERAMIC	33P	J	50V
C1854	403 026 2902	CERAMIC	47P	J	50V
C1855	403 028 4201	CERAMIC	56P	J	50V
C1861	403 069 5601	CERAMIC	0.01U	K	50V
C1862	403 163 7907	ELECT	47U	M	6.3V
C2901	403 163 7907	ELECT	47U	M	6.3V
C2902	403 068 0409	CERAMIC	0.1U	Z	25V
C2903	403 068 0409	CERAMIC	0.1U	Z	25V
C2904	403 068 0409	CERAMIC	0.1U	Z	25V
C2905	403 163 8409	ELECT	47U	M	16V
C2906	403 068 0409	CERAMIC	0.1U	Z	25V
C2907	403 068 0409	CERAMIC	0.1U	Z	25V
C2908	403 193 8202	ELECT	0.1U	M	50V
C2909	403 068 0409	CERAMIC	0.1U	Z	25V
C2910	403 068 0409	CERAMIC	0.1U	Z	25V
C2911	403 068 0409	CERAMIC	0.1U	Z	25V
C2912	403 068 0409	CERAMIC	0.1U	Z	25V
C2913	403 068 0409	CERAMIC	0.1U	Z	25V
(RESISTORS)					
R1801	401 038 7700	MT-GLAZE	5.6K	JA	1/10W
R1802	401 037 6803	MT-GLAZE	12K	JA	1/10W
R1803	401 038 0800	MT-GLAZE	22K	JA	1/10W
R1805	401 038 0800	MT-GLAZE	22K	JA	1/10W
R1806	401 037 5400	MT-GLAZE	1K	JA	1/10W
R1807	401 038 6307	MT-GLAZE	470	JA	1/10W
R1808	401 038 0701	MT-GLAZE	2.2K	JA	1/10W
R1809	401 038 0701	MT-GLAZE	2.2K	JA	1/10W
R1810	401 037 5400	MT-GLAZE	1K	JA	1/10W
R1811	401 037 7305	MT-GLAZE	1.3K	JA	1/10W
R1812	401 038 7700	MT-GLAZE	5.6K	JA	1/10W
R1813	401 038 7700	MT-GLAZE	5.6K	JA	1/10W
R1814	401 038 3702	MT-GLAZE	33K	JA	1/10W
R1815	401 038 3702	MT-GLAZE	33K	JA	1/10W
R1816	401 038 0701	MT-GLAZE	2.2K	JA	1/10W
R1817	401 038 0701	MT-GLAZE	2.2K	JA	1/10W
R1831	401 038 7601	MT-GLAZE	560	JA	1/10W
R1832	401 038 6307	MT-GLAZE	470	JA	1/10W
R1850	401 037 9200	MT-GLAZE	1.8K	JA	1/10W
R1851	401 037 5400	MT-GLAZE	1K	JA	1/10W
R1852	401 038 0800	MT-GLAZE	22K	JA	1/10W
R1853	401 038 0800	MT-GLAZE	22K	JA	1/10W
R1854	401 038 5003	MT-GLAZE	390	JA	1/10W
R1855	401 038 5003	MT-GLAZE	390	JA	1/10W
R1856	401 037 5400	MT-GLAZE	1K	JA	1/10W
R1857	401 039 0304	MT-GLAZE	820	JA	1/10W
R1858	401 039 0304	MT-GLAZE	820	JA	1/10W
R1859	401 037 7909	MT-GLAZE	1.5K	JA	1/10W
R1860	401 038 2002	MT-GLAZE	270	JA	1/10W
R2901	401 038 5508	MT-GLAZE	4.7	JA	1/10W
R2902	401 037 5103	MT-GLAZE	10	JA	1/10W
R2903	401 037 9101	MT-GLAZE	180	JA	1/10W
R2904	401 037 6605	MT-GLAZE	120	JA	1/10W
R2905	401 037 5400	MT-GLAZE	1K	JA	1/10W
R2906	401 038 0701	MT-GLAZE	2.2K	JA	1/10W
R2907	401 037 9101	MT-GLAZE	180	JA	1/10W
R2908	401 037 5400	MT-GLAZE	1K	JA	1/10W
(JUMPER)					
J1856	401 037 5004	MT-GLAZE	0.000	ZA	1/10W

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COMPL PWB,TM-1

COMPL.NO 613 153 2465

(REMOTE RECEIVERS)		
RR701	613 129 0938	IR RECEIVER PACK UNIT
OR	613 134 9087	IR RECEIVER PACK UNIT
(DISPLAYS)		
A7001	645 004 0597	FLUORESCENT TUBE
OR	645 004 0603	FLUORESCENT TUBE
(MISCELLANEOUS)		
	613 139 2267	HOLDER FL

LOCATION	PARTS NO.	DESCRIPTION

* * *

COMPL PCB,TM-9

COMPL.NO 613 158 5751

(INTEGRATED CIRCUIT)

IC771	409 340 9600	IC SDA5649

(CAPACITORS)

C7701	403 060 7505	POLYESTER 0.033U J 50V
C7702	403 071 8102	CERAMIC 2200P K 50V
C7703	403 256 4608	MT-COMPO 0.33U J 50V
C7704	403 013 3004	CERAMIC 150P J 50V
C7705	403 068 0409	CERAMIC 0.1U Z 25V

(RESISTORS)

R7701	401 038 9209	MT-GLAZE 6.8K JA 1/10W
R7702	401 037 7008	MT-GLAZE 1.2M JA 1/10W
R7703	401 038 9209	MT-GLAZE 6.8K JA 1/10W
R7704	401 037 7008	MT-GLAZE 1.2M JA 1/10W
R7705	401 037 5806	MT-GLAZE 1M JA 1/10W
R7706	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R7707	401 037 5707	MT-GLAZE 100K JA 1/10W
R7708	401 037 5608	MT-GLAZE 10K JA 1/10W

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COMPL PWB,TB-1

COMPL.NO 613 154 1856

(DIODES)

D8697	407 099 7000	ZENER DIODE MTZJ15B
OR	407 070 1706	ZENER DIODE GZS15Y

(CAPACITORS)

C8502	403 018 7502	CERAMIC 220P J 50V
C8504	403 018 7502	CERAMIC 220P J 50V
C8506	403 069 1702	CERAMIC 1000P K 50V
C8508	403 069 1702	CERAMIC 1000P K 50V
C8513	403 018 7502	CERAMIC 220P J 50V
C8522	403 018 7502	CERAMIC 220P J 50V
C8524	403 018 7502	CERAMIC 220P J 50V
C8526	403 069 1702	CERAMIC 1000P K 50V
C8528	403 069 1702	CERAMIC 1000P K 50V
C8533	403 018 7502	CERAMIC 220P J 50V
C8602	403 189 2405	ELECT 10U M 16V

(RESISTORS)

R8501	401 037 5400	MT-GLAZE 1K JA 1/10W
R8502	401 038 6307	MT-GLAZE 470 JA 1/10W
R8503	401 037 5400	MT-GLAZE 1K JA 1/10W
R8504	401 037 5400	MT-GLAZE 1K JA 1/10W
R8508	401 038 6307	MT-GLAZE 470 JA 1/10W
R8521	401 037 5400	MT-GLAZE 1K JA 1/10W
R8522	401 038 6307	MT-GLAZE 470 JA 1/10W
R8523	401 037 5400	MT-GLAZE 1K JA 1/10W
R8524	401 037 5400	MT-GLAZE 1K JA 1/10W
R8528	401 038 6307	MT-GLAZE 470 JA 1/10W
R8602	401 038 9506	MT-GLAZE 75 JA 1/10W
R8603	401 038 9506	MT-GLAZE 75 JA 1/10W

(JUMPERS)

J8680	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J8681	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J8682	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J8683	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J8684	401 037 5004	MT-GLAZE 0.000 ZA 1/10W

LOCATION	PARTS NO.	DESCRIPTION

(JACKS)

JK851	613 009 1529	SOCKET
JK852	613 085 8092	SOCKET
JK853	613 009 1529	SOCKET
JK854	613 085 8092	SOCKET

(CONNECTORS)

CN871	613 105 6633	SOCKET,21P
OR	613 077 0905	SOCKET 21P
OR	645 001 9807	SOCKET,RGB 21P
CN872	613 105 6640	SOCKET,21P
OR	613 077 0912	SOCKET 21P
OR	645 001 9814	SOCKET,RGB 21P

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COMPL PWB,TN-5

COMPL.NO 613 154 1863

(SEMICONDUCTORS)

Q6701	405 015 8407	TR 2SC2812-L5
OR	405 015 8704	TR 2SC2812-L6
OR	405 014 4509	TR 2SC2412K-R
OR	405 014 4608	TR 2SC2412K-S

(INTEGRATED CIRCUITS)

IC671	409 325 4302	IC TB1212F
IC672	409 325 4401	IC TA2047F

(CRYSTAL DEVICES)

X6701	613 123 4154	OSC,CRYSTAL 11.648MHZ
X6702	613 084 3227	OSC CRYSTAL,6.552MHZ

(CERAMIC RESONATORS)

XF671	613 084 3173	FILTER,6.552MHZ
OR	613 130 6073	FILTER,6.552MHZ B.P.F
XF672	645 000 2830	TRAP,CERAMIC 6.0MHZ

(INDUCTORS)

L6701	613 015 6419	COIL,INDUCTOR 2.2UHJ
OR	613 014 8476	HF CHOKE 2.2UHJ
L6702	613 015 6419	COIL,INDUCTOR 2.2UHJ
OR	613 014 8476	HF CHOKE 2.2UHJ
L6703	613 015 6419	COIL,INDUCTOR 2.2UHJ
OR	613 014 8476	HF CHOKE 2.2UHJ
L6731	613 014 1101	COIL,INDUCTOR 15UHJ
OR	613 014 4621	HF CHOKE 003

(CAPACITORS)

C6701	403 069 5601	CERAMIC 0.01U K 50V
C6702	403 069 5601	CERAMIC 0.01U K 50V
C6703	403 069 5601	CERAMIC 0.01U K 50V
C6704	403 069 5601	CERAMIC 0.01U K 50V
C6705	403 069 5601	CERAMIC 0.01U K 50V
C6706	403 248 1905	ELECT 10U M 16V
C6707	403 027 1201	CERAMIC 5P C 50V
C6708	403 022 8205	CERAMIC 33P J 50V
C6709	403 014 3409	CERAMIC 18P J 50V
C6710	403 022 8205	CERAMIC 33P J 50V
C6711	403 264 2207	MT-COMPO 0.47U J 50V
C6712	403 069 5601	CERAMIC 0.01U K 50V
C6713	403 257 0807	ELECT 0.47U M 50V
C6714	403 069 5601	CERAMIC 0.01U K 50V
C6715	403 069 5601	CERAMIC 0.01U K 50V
C6716	403 069 5601	CERAMIC 0.01U K 50V
C6717	403 257 0807	ELECT 0.47U M 50V
C6718	403 019 2209	CERAMIC 24P J 50V
C6719	403 010 8507	CERAMIC 12P J 50V
C6720	403 031 2102	CERAMIC 680P J 50V

LOCATION	PARTS NO.	DESCRIPTION
C6721	403 031 2102	CERAMIC 680P J 50V
C6722	403 121 9509	CERAMIC 0.1U Z 50V
C6723	403 121 9509	CERAMIC 0.1U Z 50V
C6724	403 243 6905	MT-COMPO 0.15U J 50V
C6725	403 071 8102	CERAMIC 2200P K 50V
C6726	403 248 1905	ELECT 10U M 16V
C6727	403 248 1905	ELECT 10U M 16V
C6728	403 073 0005	CERAMIC 3300P K 50V
C6729	403 248 1905	ELECT 10U M 16V
C6731	403 233 0302	ELECT 100U M 16V
C6732	403 070 2606	CERAMIC 0.1U Z 50V
C6733	403 248 1905	ELECT 10U M 16V
C6734	403 073 0005	CERAMIC 3300P K 50V
C6735	403 248 1905	ELECT 10U M 16V
C6736	403 071 8102	CERAMIC 2200P K 50V
C6737	403 243 6905	MT-COMPO 0.15U J 50V
C6738	403 069 5601	CERAMIC 0.01U K 50V
C6739	403 233 0302	ELECT 100U M 16V
C6740	403 069 5601	CERAMIC 0.01U K 50V
C6741	403 258 2602	ELECT 100U M 6.3V
C6742	403 069 5601	CERAMIC 0.01U K 50V
C6743	403 258 2602	ELECT 100U M 6.3V

(RESISTORS)

LOCATION	PARTS NO.	DESCRIPTION
R6701	401 038 5003	MT-GLAZE 390 JA 1/10W
R6702	401 038 2101	MT-GLAZE 2.7K JA 1/10W
R6703	401 037 5608	MT-GLAZE 10K JA 1/10W
R6704	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R6705	401 037 5202	MT-GLAZE 100 JA 1/10W
R6706	401 038 2002	MT-GLAZE 270 JA 1/10W
R6707	401 039 0205	MT-GLAZE 82 JA 1/10W
R6708	401 038 9001	MT-GLAZE 680 JA 1/10W
R6709	401 037 5608	MT-GLAZE 10K JA 1/10W
R6710	401 038 0602	MT-GLAZE 220 JA 1/10W
R6711	401 038 9001	MT-GLAZE 680 JA 1/10W
R6712	401 038 5300	MT-GLAZE 39K JA 1/10W
R6713	401 038 0909	MT-GLAZE 220K JA 1/10W
R6714	401 037 9200	MT-GLAZE 1.8K JA 1/10W
R6715	401 038 5300	MT-GLAZE 39K JA 1/10W
R6716	401 038 3504	MT-GLAZE 330 JA 1/10W
R6717	401 038 7601	MT-GLAZE 560 JA 1/10W
R6718	401 038 0107	MT-GLAZE 2K JA 1/10W
R6719	401 037 5400	MT-GLAZE 1K JA 1/10W
R6720	401 037 6803	MT-GLAZE 12K JA 1/10W
R6721	401 037 9309	MT-GLAZE 18K JA 1/10W
R6722	401 037 9309	MT-GLAZE 18K JA 1/10W
R6723	401 037 6803	MT-GLAZE 12K JA 1/10W
R6724	401 037 5400	MT-GLAZE 1K JA 1/10W
R6725	401 038 0107	MT-GLAZE 2K JA 1/10W
R6726	401 038 7601	MT-GLAZE 560 JA 1/10W
R6727	401 038 3504	MT-GLAZE 330 JA 1/10W
R6728	401 038 7700	MT-GLAZE 5.6K JA 1/10W
R6729	401 038 9209	MT-GLAZE 6.8K JA 1/10W

(JUMPERS)

LOCATION	PARTS NO.	DESCRIPTION
J6715	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J6716	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J6731	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J6732	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J6733	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J6752	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J6754	401 037 5004	MT-GLAZE 0.000 ZA 1/10W

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COMPL PWB,AD-1

COMPL.NO 613 154 1870

(SEMICONDUCTORS)

LOCATION	PARTS NO.	DESCRIPTION
Q2001	405 018 0101	TR 2SC3331-T
OR	405 018 0200	TR 2SC3331-U
Q2002	405 003 7207	TR 2SA1342
OR	405 000 1109	TR DTA124EK
Q2004	405 018 1900	TR 2SC3395
OR	405 029 3504	TR DTC144EK
Q2008	405 018 1900	TR 2SC3395
OR	405 029 3504	TR DTC144EK
Q2011	405 015 8407	TR 2SC2812-L5
OR	405 015 8704	TR 2SC2812-L6
OR	405 014 4509	TR 2SC2412K-R
OR	405 014 4608	TR 2SC2412K-S
Q2306	405 013 6801	TR 2SC2274-E
OR	405 013 7006	TR 2SC2274-F
Q2314	405 003 7108	TR 2SA1341
OR	405 000 2007	TR DTA144EK
Q2502	405 018 1900	TR 2SC3395
OR	405 029 3504	TR DTC144EK

(INTEGRATED CIRCUITS)

LOCATION	PARTS NO.	DESCRIPTION
IC201	409 189 3404	IC BA7755A
IC231	409 301 3602	IC AN3961NFBP-A

(DIODE)

LOCATION	PARTS NO.	DESCRIPTION
D2301	407 053 6803	ZENER DIODE MTZ5.6C

(VARIABLE RESISTORS)

LOCATION	PARTS NO.	DESCRIPTION
VR201	613 097 7915	VR,SEMI 100KB
OR	613 001 9097	SEMI VR 100KB
VR233	645 002 7703	VR,SEMI,10K S
VR234	645 002 7710	VR,SEMI,5K S

(INDUCTORS)

LOCATION	PARTS NO.	DESCRIPTION
L2001	613 015 6297	COIL,INDUCTOR 560UHJ
L2002	613 015 5443	HF CHOKE 27MH
L2003	613 014 3532	HF CHOKE 10000UHJ

(TRANSFORMER)

LOCATION	PARTS NO.	DESCRIPTION
T2001	621 019 9596	70KHZ OSC TRANS

(CAPACITORS)

LOCATION	PARTS NO.	DESCRIPTION
C2001	403 193 8400	ELECT 0.22U M 50V
C2002	403 069 5601	CERAMIC 0.01U K 50V
C2003	403 193 3900	ELECT 33U M 6.3V
C2004	403 070 8806	CERAMIC 1500P K 50V
C2005	403 049 1906	ELECT 1U M 50V
C2006	403 120 8206	CERAMIC 0.012U K 16V
C2007	403 189 2405	ELECT 10U M 16V
C2009	403 014 9203	CERAMIC 180P J 50V
C2019	403 163 8409	ELECT 47U M 16V
C2021	403 069 5601	CERAMIC 0.01U K 50V
C2022	403 069 5601	CERAMIC 0.01U K 50V
C2023	403 018 7403	CERAMIC 220P J 50V
C2024	403 082 4209	POLYPRO 6800P J 100V
C2025	403 073 0005	CERAMIC 3300P K 50V
C2027	403 138 2500	CERAMIC 0.022U K 16V
C2301	403 189 2405	ELECT 10U M 16V
C2302	403 189 2405	ELECT 10U M 16V
C2303	403 189 2405	ELECT 10U M 16V
C2304	403 139 1502	ELECT 10U M 16V
C2305	403 189 2405	ELECT 10U M 16V
C2306	403 139 1502	ELECT 10U M 16V
C2307	403 189 2405	ELECT 10U M 16V
C2308	403 189 2405	ELECT 10U M 16V
C2310	403 167 6500	ELECT 33U M 6.3V
C2311	403 258 2701	ELECT 33U M 6.3V
C2312	403 167 6500	ELECT 33U M 6.3V
C2313	403 130 3109	CERAMIC 0.047U K 50V

LOCATION	PARTS NO.	DESCRIPTION
C2314	403 130 3109	CERAMIC 0.047U K 50V
C2315	403 248 2803	ELECT 2.2U M 50V
C2316	403 191 8808	ELECT 2.2U M 50V
C2317	403 258 2602	ELECT 100U M 6.3V
C2318	403 159 8109	ELECT 100U M 6.3V
C2319	403 070 9803	CERAMIC 0.015U K 50V
C2320	403 070 9803	CERAMIC 0.015U K 50V
C2321	403 069 5601	CERAMIC 0.01U K 50V
C2322	403 069 5601	CERAMIC 0.01U K 50V
C2323	403 069 5601	CERAMIC 0.01U K 50V
C2324	403 069 5601	CERAMIC 0.01U K 50V
C2325	403 069 5601	CERAMIC 0.01U K 50V
C2326	403 069 5601	CERAMIC 0.01U K 50V
C2327	403 163 7907	ELECT 47U M 6.3V
C2329	403 069 5601	CERAMIC 0.01U K 50V
C2330	403 069 5601	CERAMIC 0.01U K 50V
C2331	403 139 1502	ELECT 10U M 16V
C2332	403 139 1502	ELECT 10U M 16V
C2333	403 189 2405	ELECT 10U M 16V
C2334	403 163 8409	ELECT 47U M 16V
C2343	403 139 1502	ELECT 10U M 16V
C2344	403 184 9805	MT-POLYEST 0.22U J 50V
C2345	403 020 5503	CERAMIC 270P J 50V
C2350	403 069 5601	CERAMIC 0.01U K 50V
C2352	403 189 2405	ELECT 10U M 16V
C2353	403 258 3203	ELECT 22U M 16V
C2354	403 191 8709	ELECT 1U M 50V
C2361	403 163 7907	ELECT 47U M 6.3V
C2362	403 069 5601	CERAMIC 0.01U K 50V
C2371	403 069 5601	CERAMIC 0.01U K 50V
C2372	403 069 5601	CERAMIC 0.01U K 50V

(RESISTORS)

LOCATION	PARTS NO.	DESCRIPTION
R2001	401 038 2101	MT-GLAZE 2.7K JA 1/10W
R2002	401 037 5608	MT-GLAZE 10K JA 1/10W
R2003	401 038 2309	MT-GLAZE 270K JA 1/10W
R2004	401 038 1203	MT-GLAZE 240 JA 1/10W
R2005	401 038 0206	MT-GLAZE 20K JA 1/10W
R2006	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R2007	401 037 8708	MT-GLAZE 16K JA 1/10W
R2008	401 037 8005	MT-GLAZE 15K JA 1/10W
R2010	401 038 3603	MT-GLAZE 3.3K JA 1/10W
R2013	401 018 1506	CARBON 33 JA 1/4W
R2015	401 038 5508	MT-GLAZE 4.7 JA 1/10W
R2035	401 037 8005	MT-GLAZE 15K JA 1/10W
R2036	401 038 6208	MT-GLAZE 47 JA 1/10W
R2037	401 038 6505	MT-GLAZE 47K JA 1/10W
R2038	401 037 5202	MT-GLAZE 100 JA 1/10W
R2039	401 038 3702	MT-GLAZE 33K JA 1/10W
R2051	401 038 5102	MT-GLAZE 3.9K JA 1/10W
R2052	401 037 5400	MT-GLAZE 1K JA 1/10W
R2054	401 038 3702	MT-GLAZE 33K JA 1/10W
R2055	401 037 8005	MT-GLAZE 15K JA 1/10W
R2301	401 038 5300	MT-GLAZE 39K JA 1/10W
R2302	401 038 5300	MT-GLAZE 39K JA 1/10W
R2303	401 037 9309	MT-GLAZE 18K JA 1/10W
R2304	401 037 9309	MT-GLAZE 18K JA 1/10W
R2305	401 038 5300	MT-GLAZE 39K JA 1/10W
R2306	401 038 5300	MT-GLAZE 39K JA 1/10W
R2307	401 037 9309	MT-GLAZE 18K JA 1/10W
R2308	401 037 9309	MT-GLAZE 18K JA 1/10W
R2309	401 038 3702	MT-GLAZE 33K JA 1/10W
R2310	401 038 3702	MT-GLAZE 33K JA 1/10W
R2311	401 038 3108	MT-GLAZE 30K JA 1/10W
R2312	401 038 3108	MT-GLAZE 30K JA 1/10W
R2313	401 038 7106	MT-GLAZE 510 JA 1/10W
R2314	401 038 7106	MT-GLAZE 510 JA 1/10W
R2315	401 038 6406	MT-GLAZE 4.7K JA 1/10W
R2316	401 038 6406	MT-GLAZE 4.7K JA 1/10W
R2317	401 037 6803	MT-GLAZE 12K JA 1/10W
R2318	401 037 6803	MT-GLAZE 12K JA 1/10W
R2319	401 038 5102	MT-GLAZE 3.9K JA 1/10W
R2320	401 038 5102	MT-GLAZE 3.9K JA 1/10W
R2321	401 164 9708	MT-FILM 15K DU 1/10W
R2322	401 164 9500	MT-FILM 12K DU 1/10W
R2323	401 038 2101	MT-GLAZE 2.7K JA 1/10W
R2324	401 037 5400	MT-GLAZE 1K JA 1/10W
R2329	401 038 0909	MT-GLAZE 220K JA 1/10W
R2330	401 038 0909	MT-GLAZE 220K JA 1/10W
R2337	401 038 7908	MT-GLAZE 560K JA 1/10W
R2338	401 038 3900	MT-GLAZE 3.3M JA 1/10W
R2339	401 037 5400	MT-GLAZE 1K JA 1/10W
R2340	401 037 6803	MT-GLAZE 12K JA 1/10W
R2343	401 037 5707	MT-GLAZE 100K JA 1/10W
R2346	401 038 0602	MT-GLAZE 220 JA 1/10W
R2347	401 038 6406	MT-GLAZE 4.7K JA 1/10W
R2348	401 038 6406	MT-GLAZE 4.7K JA 1/10W
R2349	401 038 6406	MT-GLAZE 4.7K JA 1/10W
R2350	401 038 7403	MT-GLAZE 510K JA 1/10W
R2351	401 038 5300	MT-GLAZE 39K JA 1/10W
R2352	401 038 5300	MT-GLAZE 39K JA 1/10W
R2353	401 037 9309	MT-GLAZE 18K JA 1/10W
R2354	401 037 9309	MT-GLAZE 18K JA 1/10W
R2355	401 038 3702	MT-GLAZE 33K JA 1/10W
R2356	401 038 3108	MT-GLAZE 30K JA 1/10W
R2360	401 038 0800	MT-GLAZE 22K JA 1/10W
R2361	401 037 5608	MT-GLAZE 10K JA 1/10W
R2368	401 037 5400	MT-GLAZE 1K JA 1/10W
R2371	401 037 9200	MT-GLAZE 1.8K JA 1/10W
R2380	401 038 0909	MT-GLAZE 220K JA 1/10W
R2384	401 038 0602	MT-GLAZE 220 JA 1/10W
R2385	401 038 0602	MT-GLAZE 220 JA 1/10W

(JUMPERS)

LOCATION	PARTS NO.	DESCRIPTION
J2101	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J2102	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J2103	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J2104	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J2301	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J2302	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J2501	401 037 5004	MT-GLAZE 0.000 ZA 1/10W

****

COMPL PCB,MC-1

COMPL.NO 613 120 9060

(DIODES)

LOCATION	PARTS NO.	DESCRIPTION
D8001	407 094 1300	PHOTO COUPLE SPI-315-04-C
OR	407 043 0101	PHOTO DIODE ON2170-R

(RESISTORS)

LOCATION	PARTS NO.	DESCRIPTION
R8001	401 026 0607	CARBON 270 JA 1/6W
OR	401 017 0708	CARBON 270 JA 1/4W
R8002	401 024 6700	CARBON 100 JA 1/6W
OR	401 012 4404	CARBON 100 JA 1/4W

(SWITCH)

LOCATION	PARTS NO.	DESCRIPTION
S8001	613 022 4545	SPECIAL SWITCH

****

FLEXIBLE FLAT CABLE

LOCATION	PARTS NO.	DESCRIPTION
	613 153 8627	FLEXIBLE FLAT CABLES CN303-CN811
	613 155 6966	FLEXIBLE FLAT CABLES CN301-CN701
	613 154 8800	FLEXIBLE FLAT CABLES CN101-CN181

5. MECHANISM

Use this service manual together with the mechanism service technical information of VR182LV, VR194LV and VR204NV (Part No. TP30036) published in 1993.

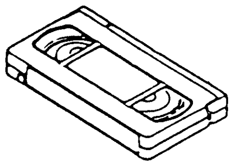
Note: The page number within the parenthesis above each title mentioned later indicates the page number of the service technical information of VR182LV, VR194LV and VR204NV. Replace the page numbers with those in the parenthesis on usage.

[Page 45]

4-1-3. Service Jigs

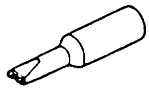
No.	Jig	Jig No.	Remarks
1	Alignment tape	VHJ-0008	SP color bar, 1kHz (normal)
2	Alignment tape	VHJ-0009	SP monoscope, 7kHz (normal)
3	Alignment tape	VHJ-0052	LP monoscope, 3KHz (normal)
4	Eccentric screwdriver	VHJ-0003	For tape path adjustment
5	Nut box	VHJ-0048	For fixed guide removal
6	Torque gauge	VHJ-0004	For reel take-up torque measurement
7	Cassette torquemeter	VHJ-0016	For back tension torque measurement
8	Position adjustment gauge	VHJ-0049	For position adjustment
9	Torque gauge screwdriver	VHJ-0014	For screw fastening torque adjustment
10	3mm dia. bit for torque screwdriver	VHJ-0045	Spare bit for the torque gauge screwdriver
11	Video head removing tool	VHJ-0041	For upper drum removal
12	Cassette stand plate gauge	VHJ-0001	For reel height adjustment
13	Mode selector and 26-pin flexible flat cable (VHJ-0064)	VHJ-0050	For mechanism mode selection and for connecting mode selector
14	26-pin flexible flat cable	VHJ-0064	Spare cable for mode selector
15	Mode selector relay board	VHJ-0103	Relay board for mode selector
16	REV guide lever removing tool	VHJ-0073	REV guide lever removal

VHJ-0008, VHJ-0009, VHJ-0052



No. 1, 2, 3

VHJ-0003



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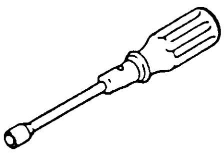

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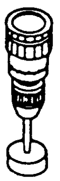

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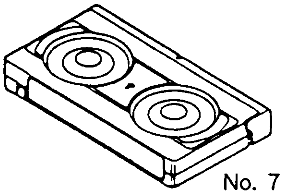

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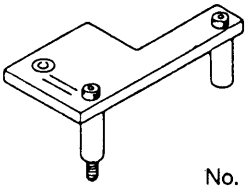

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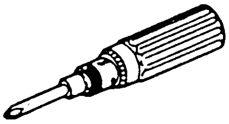

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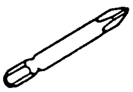

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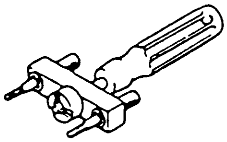
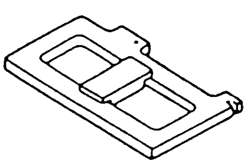


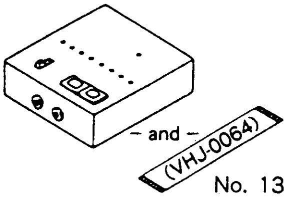
No. 11

VHJ-0001



No. 12

VHJ-0050



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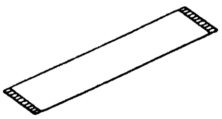
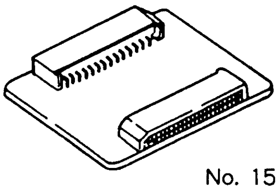
VHJ-0064



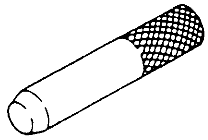
No. 14

VHJ-0103



No. 15

VHJ-0073



No. 16

4-2-3. Connection Method 2 (See Fig. 4-2-3)

Note: The conductor side of the MC-2 board is marked "T-HiFi" in big letters. Use the mode selector relay board (VHJ-0103) only when CN811 is 22-pin.

1) Remove the 22-pin flat cable extending from the COMPL MC-2 board connector (CN811) from the connector of the system control circuit board, and connect it to the 22-pin connector of the mode selector relay board (VHJ-0103).
2) Connect the 26-pin flat cable (VHJ-0064) of the mode selector (VHJ-0050) provided between the mode selector body and the 26-pin connector of the mode selector relay board (VHJ-0103).

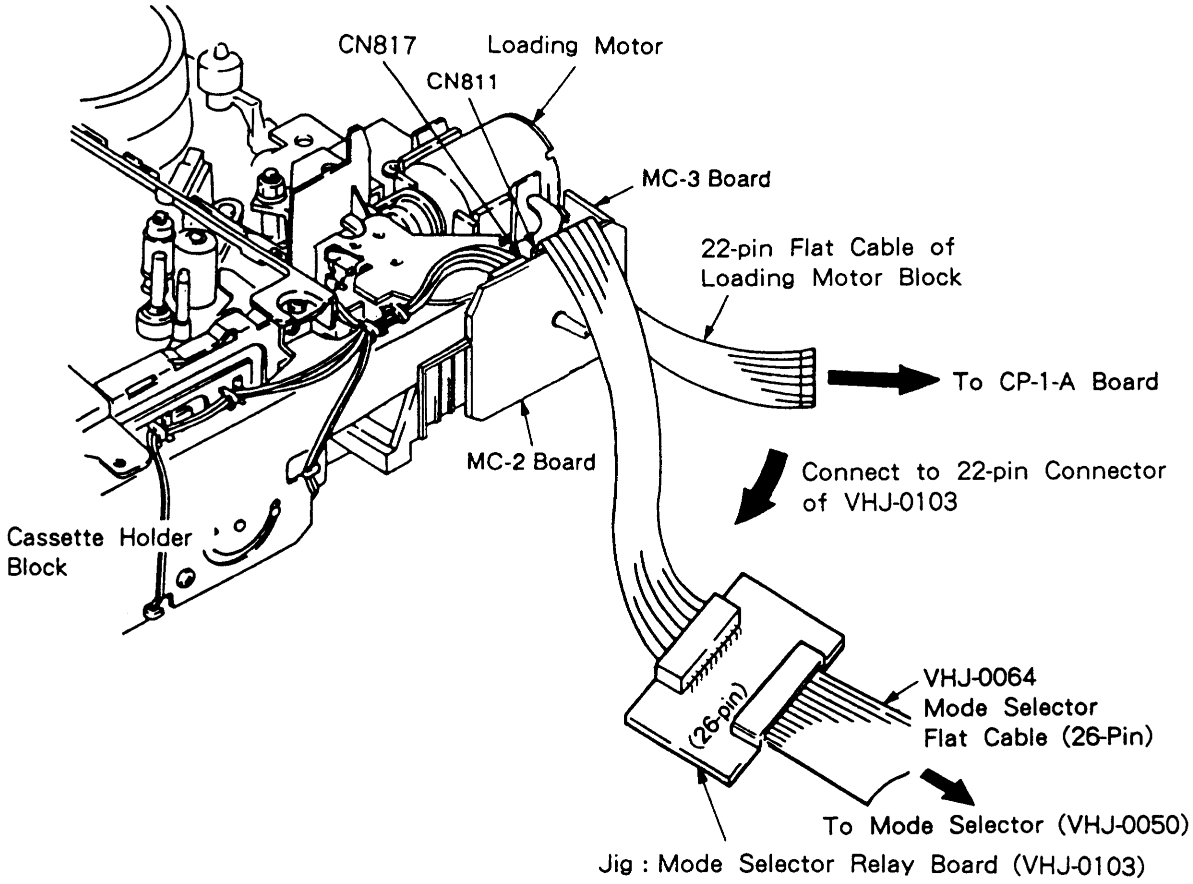

CN817
Loading Motor
CN811
MC-3 Board
22-pin Flat Cable of Loading Motor Block
To CP-1-A Board
MC-2 Board
Connect to 22-pin Connector of VHJ-0103
Cassette Holder Block
(26-pin)
VHJ-0064 Mode Selector Flat Cable (26-Pin)
To Mode Selector (VHJ-0050)
Jig : Mode Selector Relay Board (VHJ-0103)

Fig. 4-2-3. Connection

Parts No. TP30051

Parts number for Mechanical Service Manual TP30036

THORN EMI UK Rental Limited
The Park Centre, Arlington Business Park,
Theale, Reading, Berkshire RG7 4SA

Sep./'94/150 NS Printed in Japan

SM 531405

VR204NVA

BLOCK DIAGRAMS,CIRCUIT DIAGRAMS & PRINTED WIRING BOARDS

TABLE OF CONTENTS

Page

1. OVERALL WIRING, MECHANISM CONNECTION, & BLOCK DIAGRAMS

OVERALL WIRING 1
MECHANISM CONNECTION 3
VIDEO CIRCUIT 4
SYSTEM CONTROL & SERVO CIRCUIT 7
AUDIO CIRCUIT 10

2. CIRCUIT DIAGRAMS & PRINTED WIRING BOARDS (P.W.B.)

CP-1 P.W.B. 13
CP-1 BOARD (PW-A) POWER SUPPLY 15
AD-1 BOARD AUDIO 17
AD-1 P.W.B. 19
CP-1 BOARD (VD-A) VIDEO 20
VIDEO CIRCUIT WAVEFORMS 22
ON SCREEN (IC162) WAVEFORMS 23
VP-1 BOARD (AP-A) AUDIO PRE-AMP 23
VP-1 BOARD (VP-A) VIDEO PRE-AMP 24
VP-1 P.W.B. 24
IC301 SYSTEM CONTROL,TIMER, & TUNING CONTROL MPU PIN FUNCTIONS TABLE 26
CP-1 BOARD (SY-A) SYSTEM CONTROL 27
CP-1 BOARD (SV-A) SERVO 29
SERVO CIRCUIT WAVEFORMS 31
TN-5 BOARD NICAM 32
TN-5 P.W.B. 34
CP-1 BOARD (TN-A) TUNER IF CONNECTION 35
TB-1 BOARD TERMINAL 37
TB-1 P.W.B. 39
TM-9 BOARD PDC 40
TM-9 P.W.B. 40
TM-1 BOARD DISPLAY (FLD) 41
A7001 DISPLAY (FLD) GRID/ANODE ASSIGNMENT DRAWING & TABLE 42
TM-1 P.W.B. 42

TK4H/ETH2 49N

REFERENCE NO.SM531405

NOTES:

1. All resistance values in "OHMS" unless otherwise noted. (K=1,000 M=1,000,000)
2. All capacitance values in "μfd" unless otherwise noted. p=pico farad
3. All inductance values in "mH" unless otherwise noted. μ=micro henry

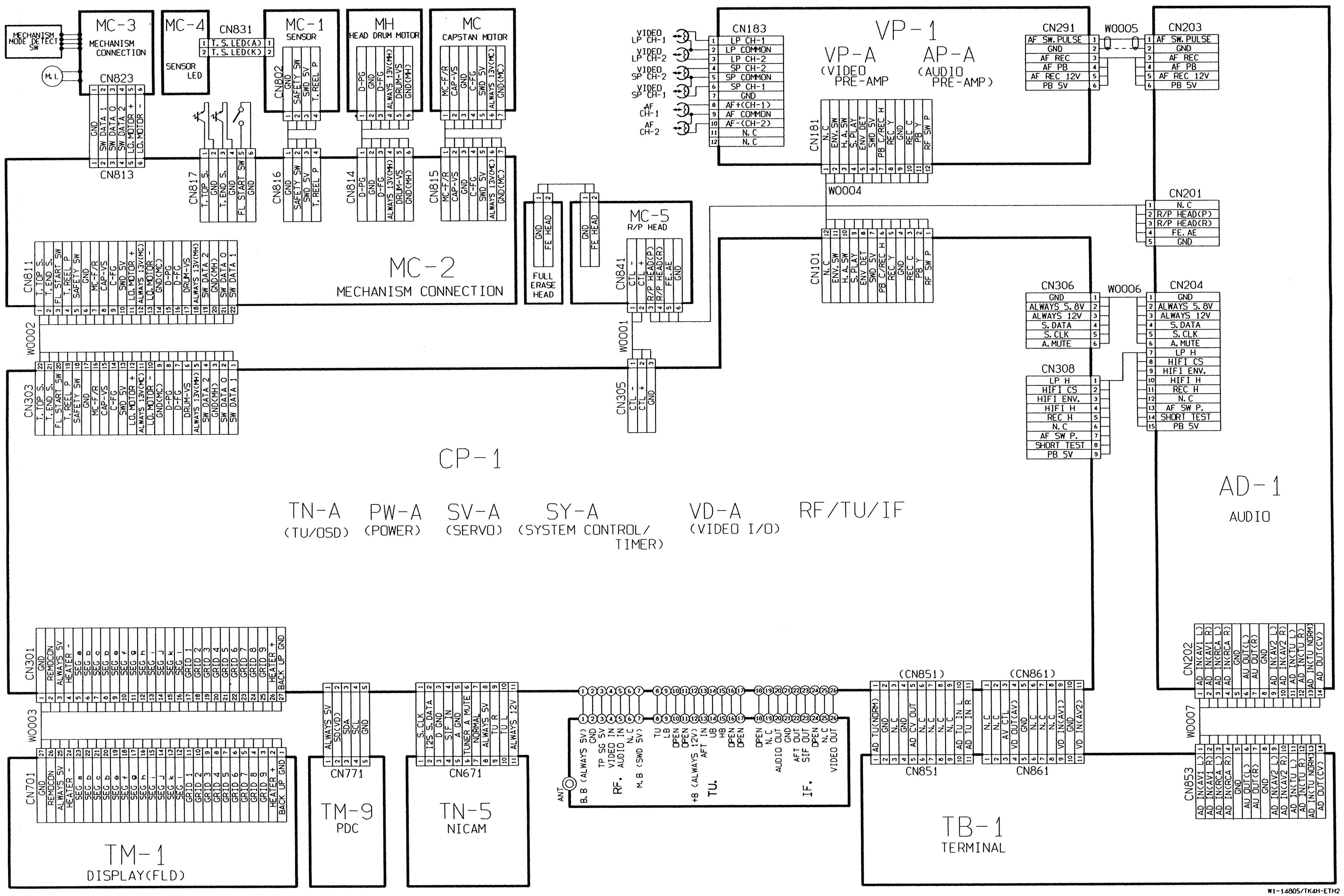
PRODUCT SAFETY NOTICE

THE COMPONENTS DESIGNATED BY A SYMBOL (⚠) IN THIS SCHEMATIC DIAGRAM DESIGNATES COMPONENTS WHOSE VALUE ARE OF SPECIAL SIGNIFICANCE TO PRODUCT SAFETY. SHOULD ANY COMPONENT DESIGNATED BY A SYMBOL NEED TO BE REPLACED, USE ONLY THE PART DESIGNATED IN THE PARTS LIST. DO NOT DEVIATE FROM THE RESISTANCE, WATTAGE AND VOLTAGE RATINGS SHOWN.

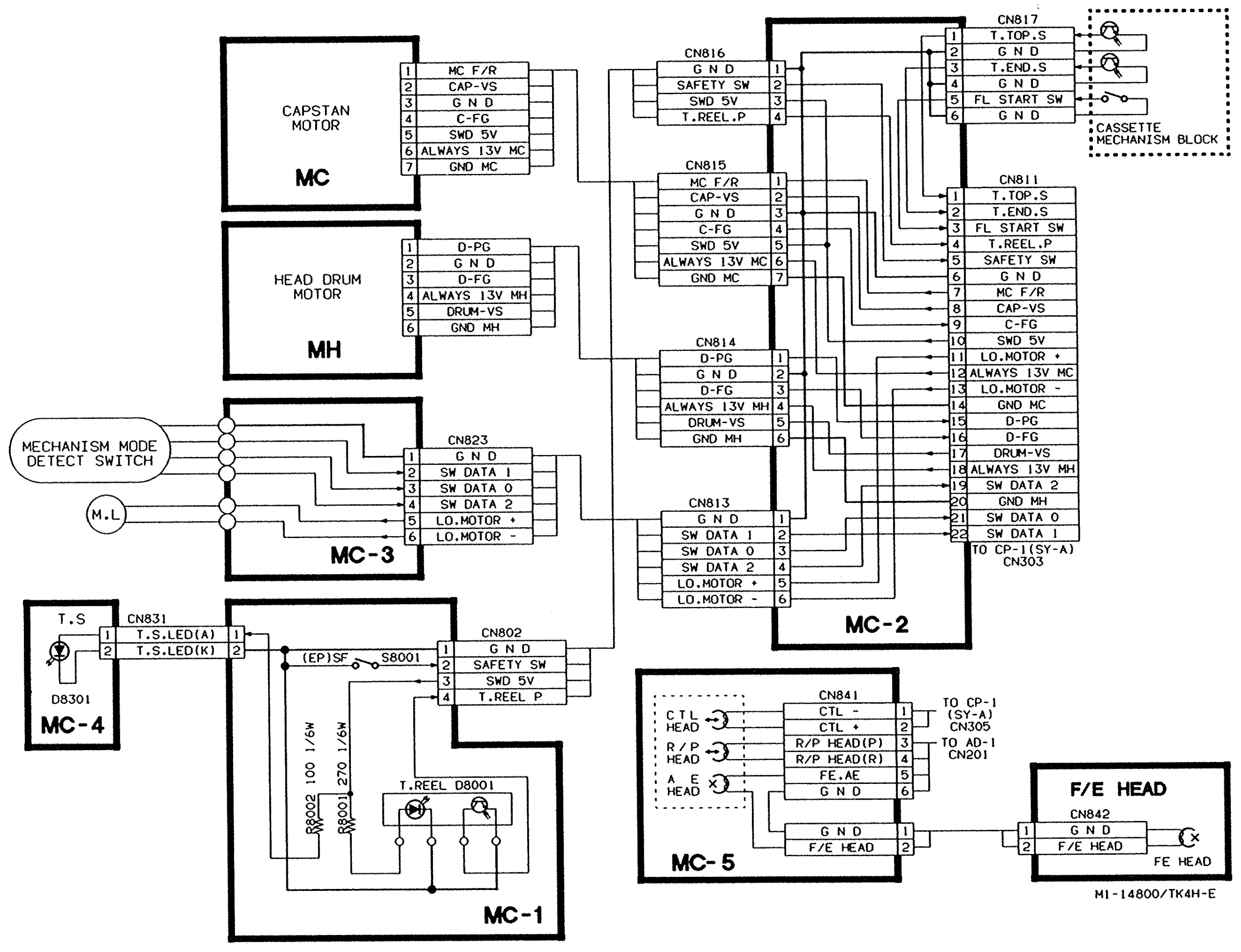
PAL-A

1. OVERALL WIRING, MECHANISM CONNECTION, & BLOCK DIAGRAMS

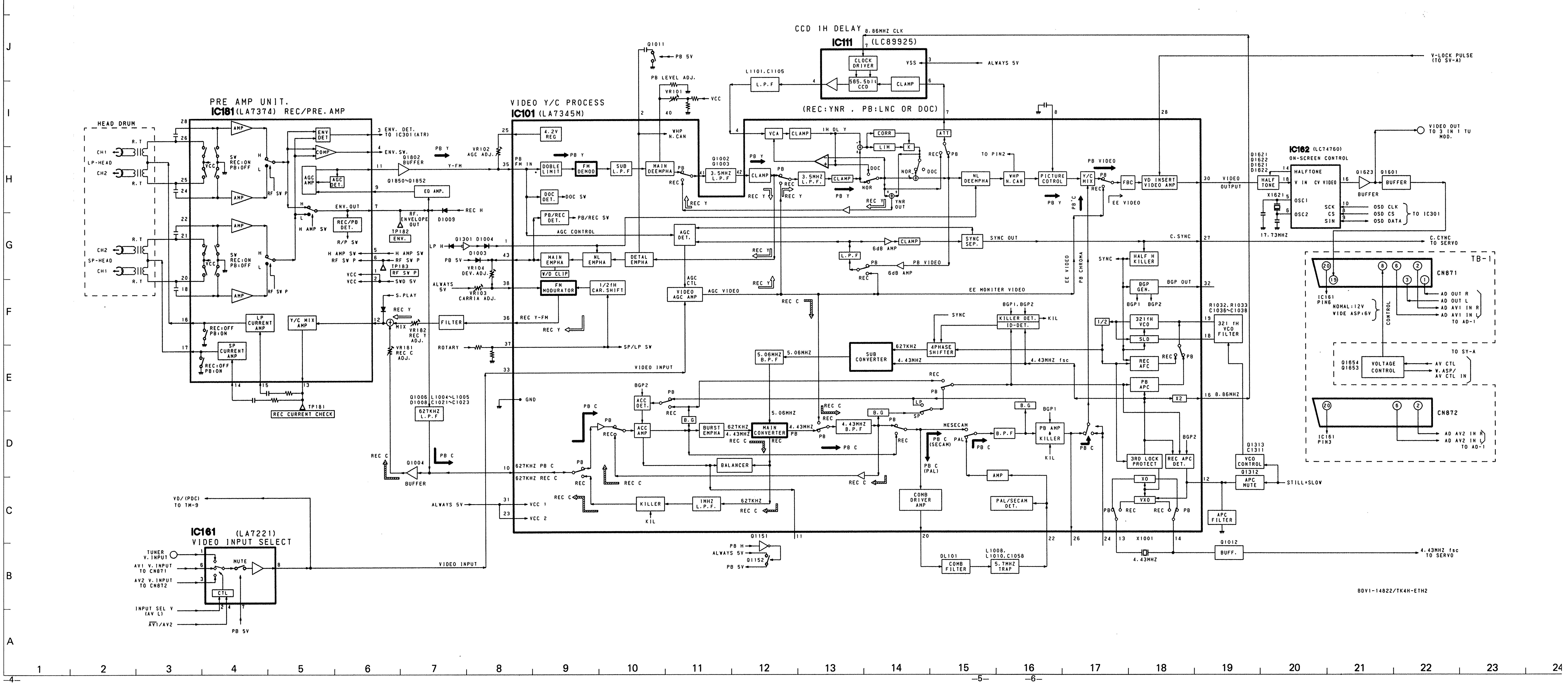
OVERALL WIRING


MECHANISM MODE DETECT SW
M.L
MC-3
MECHANISM CONNECTION
CN823
CN813
MC-4
SENSOR LED
CN831
T.S.LED(A)
T.S.LED(K)
MC-1
SENSOR
CN802
MH
HEAD DRUM MOTOR
MC
CAPSTAN MOTOR
CN817
CN816
CN814
CN815
FULL ERASE HEAD
MC-5
R/P HEAD
CN841
MC-2
MECHANISM CONNECTION
CN811
W0002
CN303
W0001
CN305
VP-1
VP-A
(VIDEO PRE-AMP
AP-A
(AUDIO PRE-AMP)
CN183
CN181
W0004
CN101
CN291
W0005
CN203
CN201
CN306
W0006
CN204
CN308
AD-1
AUDIO
CP-1
TN-A
(TU/OSD)
PW-A
(POWER)
SV-A
(SERVO)
SY-A
(SYSTEM CONTROL/ TIMER)
VD-A
(VIDEO I/O)
RF/TU/IF
CN301
W0003
CN701
TM-1
DISPLAY(FLD)
CN771
TM-9
PDC
CN671
TN-5
NICAM
ANT
RF.
TU.
IF.
(CN851)
(CN861)
CN851
CN861
TB-1
TERMINAL
CN202
W0007
CN853
M1-14805/TK4H-ETH2

MECHANISM CONNECTION


CAPSTAN MOTOR
MC
HEAD DRUM MOTOR
MH
MECHANISM MODE DETECT SWITCH
M.L
CN823
MC-3
T.S
D8301
MC-4
CN831
CN802
S8001
T.REEL D8001
R8002 100 1/6W
R8001 270 1/6W
MC-1
CN816
CN815
CN814
CN813
MC-2
CN817
CASSETTE MECHANISM BLOCK
CN811
TO CP-1(SY-A) CN303
CN841
CTL HEAD
R/P HEAD
A E HEAD
TO CP-1 (SY-A) CN305
TO AD-1 CN201
MC-5
F/E HEAD
CN842
FE HEAD
M1-14800/TK4H-E

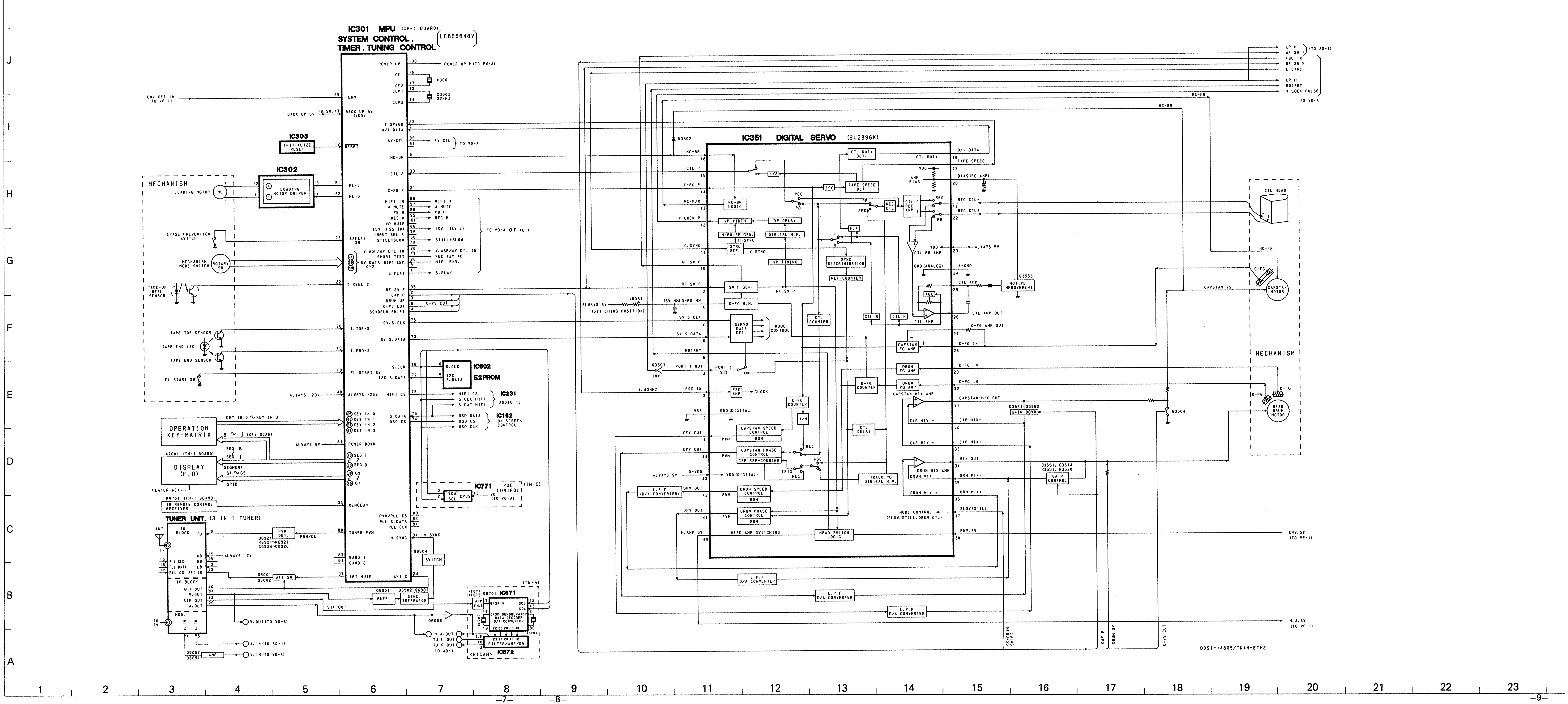
VIDEO CIRCUIT



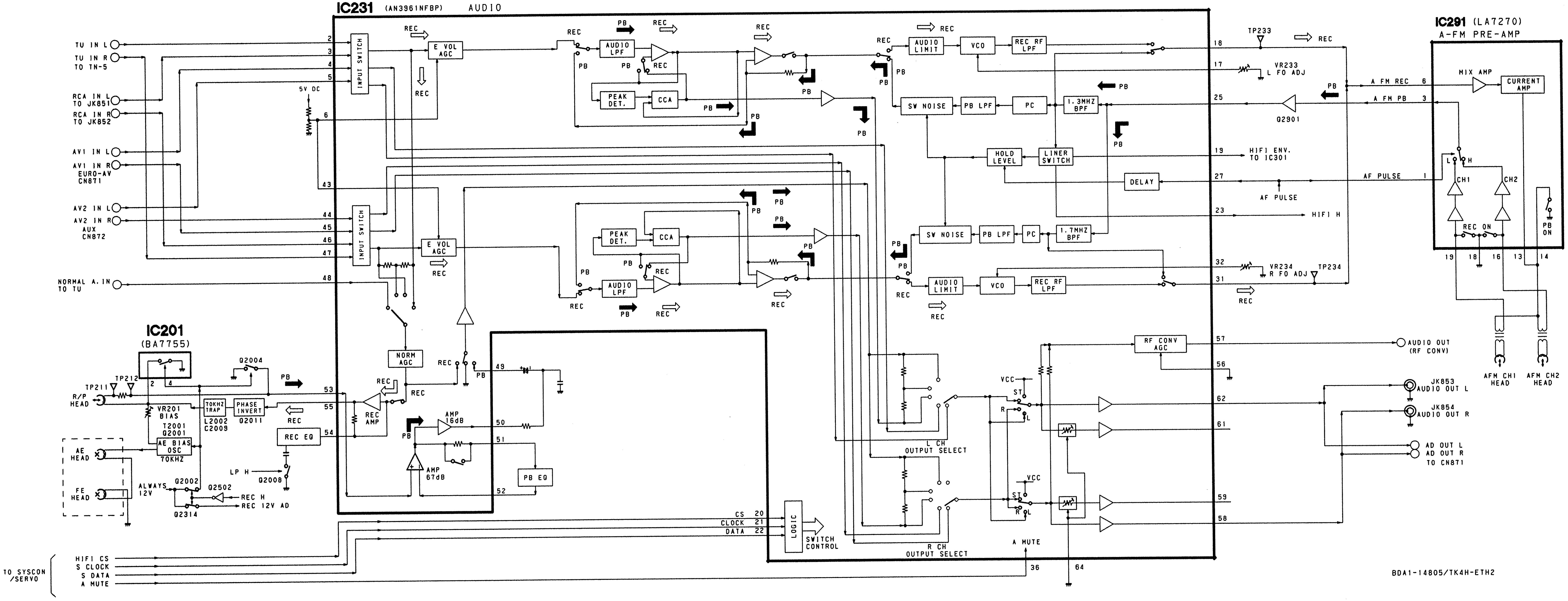
HEAD DRUM
LP-HEAD
SP-HEAD
CH1
CH2
R.T
PRE AMP UNIT.
IC181 (LA7374) REC/PRE.AMP
AMP
SW REC:ON PB:OFF
VCC
RF SW P
ENV DET
COMP
AGC AMP
AGC DET.
EQ AMP.
ENV. OUT
H AMP SW
REC/PB DET.
R/P SW
LP CURRENT AMP
SP CURRENT AMP
Y/C MIX AMP
REC:OFF PB:ON
REC CURRENT CHECK
TP181
3 ENV. DET. TO IC301 (ATR)
4 ENV. SW.
Q1802 BUFFER
Q1850~Q1852
Y-FM
PB Y
VR102 AGC ADJ.
RF. ENVELOPE OUT
TP182
ENV.
D1009
REC H
RF SW P
TP183
VCC
SWD 5V
S. PLAY
REC Y
MIX
VR182 REC Y ADJ.
VR181 REC C ADJ.
FILTER
Q1006 D1008 L1004~L1005 C1021~C1023
627KHZ L.P.F
Q1004
BUFFER
REC C
PB C
LP H
Q1301 D1004
D1003
PB 5V
VR104 DEV. ADJ.
ALWAYS 5V
VR103 CARRIA ADJ.
ROTARY
GND
VIDEO Y/C PROCESS
IC101 (LA7345M)
4.2V REG
PB FM IN
DOBLE LIMIT
FM DEMOD
SUB L.P.F
MAIN DEEMPHA
DOC DET.
DOC SW
PB/REC DET.
PB/REC SW
AGC CONTROL
AGC DET.
MAIN EMPHA
NL EMPHA
DETAL EMPHA
W/D CLIP
FM MODURATOR
1/2fH CAR. SHIFT
REC Y-FM
SP/LP SW
VIDEO INPUT
VIDEO AGC AMP
AGC CTL
AGC VIDEO
Q1011
PB LEVEL ADJ.
VR101
WHP N. CAN
Q1002 Q1003
3.5MHZ L.P.F
CCD 1H DELAY
8.86MHZ CLK
IC111 (LC89925)
CLOCK DRIVER
565.5bit CCD
CLAMP
VSS
ALWAYS 5V
L1101, C1105
L.P.F
(REC:YNR , PB:LNC OR DOC)
VCA
1H DL Y
CORR
LIM
K
NOR
DOC
YNR OUT
ATT
TO PIN2
NL DEEMPHA
WHP N. CAN
PICTURE COTROL
Y/C MIX
PB VIDEO
FBC
VD INSERT VIDEO AMP
EE VIDEO
PB CHROMA
PB'C
6dB AMP
SYNC SEP.
SYNC OUT
C. SYNC
EE MONITER VIDEO
HALF H KILLER
SYNC
BGP GEN.
BGP OUT
BGP1
BGP2
KILLER DET.
ID-DET.
KIL
4PHASE SHIFTER
SUB CONVERTER
627KHZ
4.43MHZ
4.43MHZ fsc
5.06MHZ B.P.F
5.06MHZ
1/2
321fH VCO
SLD
REC AFC
PB APC
X2
8.86MHZ
ACC DET.
ACC AMP
B.G
BURST EMPHA
MAIN CONVERTER
4.43MHZ B.P.F
LP
SP
MESECAM
PB C (SECAM)
PB C (PAL)
PAL
B.P.F
PB AMP & KILLER
BALANCER
AMP
627KHZ PB C
627KHZ REC C
KILLER
1MHZ L.P.F.
COMB DRIVER AMP
PAL/SECAM DET.
3RD LOCK PROTECT
REC APC DET.
XO
VXO
X1001
4.43MHZ
VCC 1
VCC 2
Q1151
PB H
Q1152
DL101
COMB FILTER
L1008, L1010, C1058
5.7MHZ TRAP
R1032, R1033 C1036~C1038
321 fH VCO FILTER
Q1313 C1311
VCO CONTROL
Q1312
APC MUTE
STILL+SLOW
APC FILTER
Q1012
BUFF.
4.43MHZ fsc TO SERVO
VIDEO OUTPUT
V-LOCK PULSE (TO SV-A)
Q1621 Q1622 D1621 D1622
HALF TONE
IC162 (LC74760)
ON-SCREEN CONTROL
HALFTONE
V IN
CV VIDEO
OSC1
OSC2
SCK
CS
SIN
X1621
17.73MHZ
OSD CLK
OSD CS
OSD DATA
TO IC301
Q1623
BUFFER
Q1601
VIDEO OUT TO 3 IN 1 TU MOD.
C. CYNC TO SERVO
TB-1
CN871
CN872
IC161 PIN6
IC161 PIN3
NOMAL:12V
WIDE ASP:6V
CONTROL
AD OUT R
AD OUT L
AD AV1 IN R
AD AV1 IN L
TO AD-1
TO SY-A
Q1654 Q1653
VOLTAGE CONTROL
AV CTL
V.ASP/ AV CTL IN
AD AV2 IN R
AD AV2 IN L
VD/(PDC) TO TM-9
IC161 (LA7221)
VIDEO INPUT SELECT
TUNER V. INPUT
AV1 V. INPUT TO CN871
AV2 V. INPUT TO CN872
MUTE
CTL
INPUT SEL V (AV L)
AV1/AV2
A
B
C
D
E
F
G
H
I
J
K
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

BDV1-14822/TK4H-ETH2

SYSTEM CONTROL & SERVO CIRCUIT

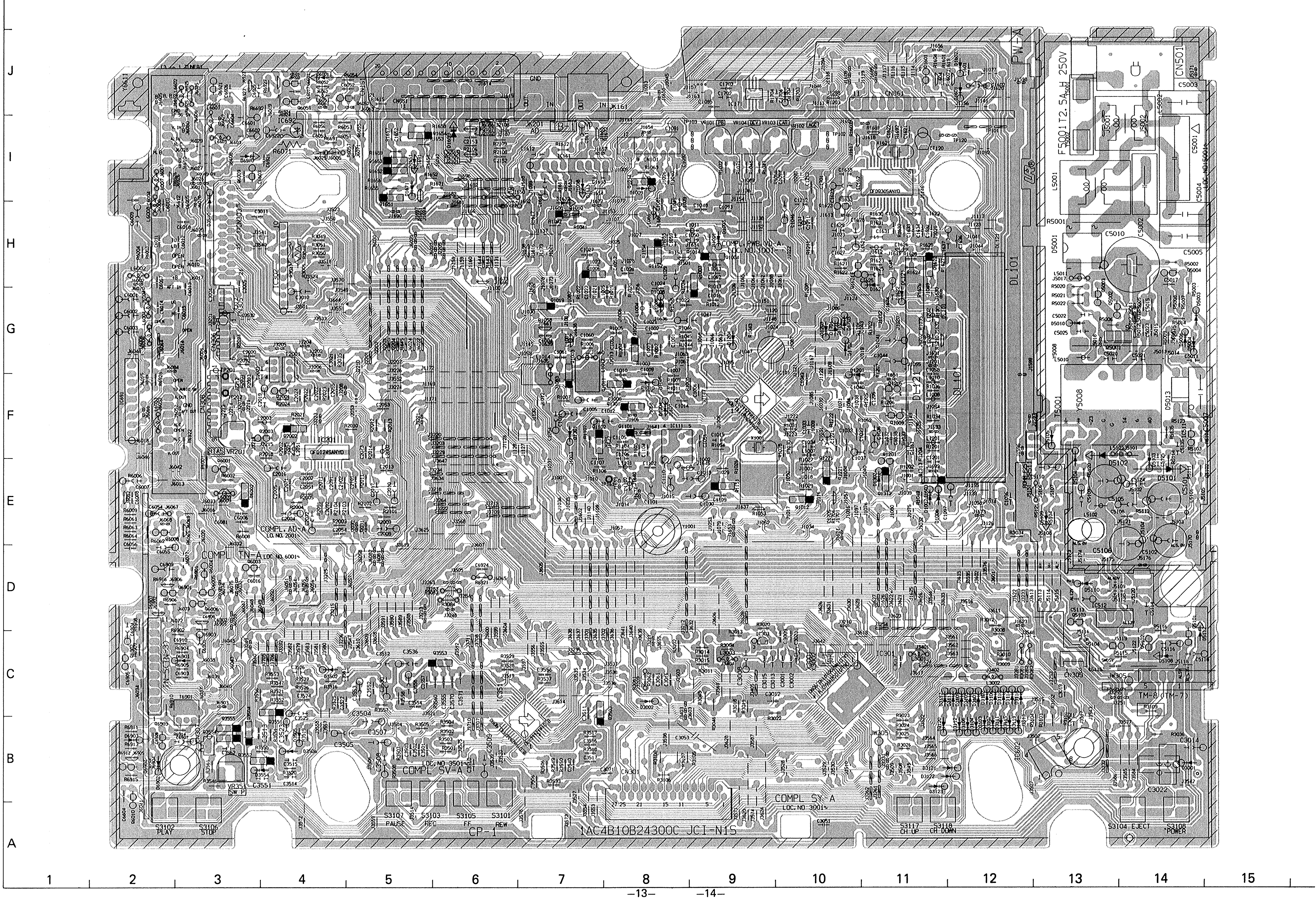

IC301 MPU (CP-1 BOARD)
SYSTEM CONTROL, TIMER, TUNING CONTROL
LC866648V
IC303 INITIALIZE RESET
IC302 LOADING MOTOR DRIVER
MECHANISM
LOADING MOTOR
ERASE PREVENTION SWITCH
MECHANISM MODE SWITCH
ROTARY SW
TAKE-UP REEL SENSOR
TAPE TOP SENSOR
TAPE END LED
TAPE END SENSOR
FL START SW
OPERATION KEY-MATRIX
DISPLAY (FLD)
AT001 (TN-1 BOARD)
RR701 (TN-1 BOARD) IR REMOTE CONTROL RECEIVER
TUNER UNIT (3 IN 1 TUNER)
IC602 E2PROM
IC231 AUDIO IC
IC162 ON SCREEN CONTROL
IC771 PDC CONTROL (TN-9)
IC671
IC672
<NICAM>
(TN-5)
X3001
X3002 32KHZ
POWER UP H (TO PW-A)
TO VD-A OR AD-1
IC351 DIGITAL SERVO (BU2896K)
CTL HEAD
CAPSTAN MOTOR
HEAD DRUM MOTOR
MECHANISM
ENV. SW (TO VP-1)
H.A.SW (TO VP-1)
BDS1-14805/TK4H-ETH2
K
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23

AUDIO CIRCUIT

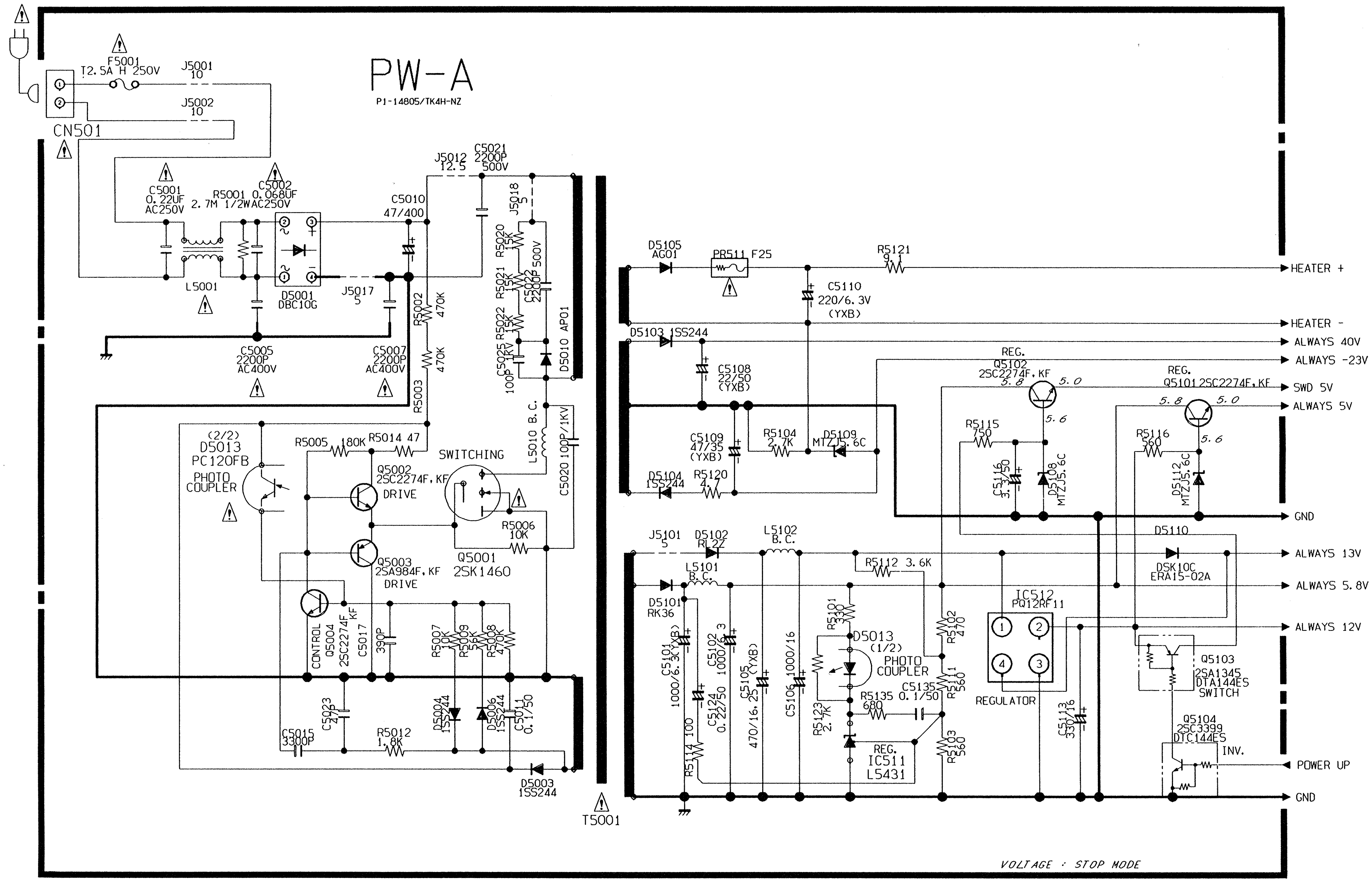

IC231 (AN3961NFBP) AUDIO
IC291 (LA7270)
A-FM PRE-AMP
IC201 (BA7755)
TU IN L
TU IN R
TO TN-5
RCA IN L
TO JK851
RCA IN R
TO JK852
AV1 IN L
AV1 IN R
EURO-AV
CN871
AV2 IN L
AV2 IN R
AUX
CN872
NORMAL A.IN
TO TU
INPUT SWITCH
E VOL AGC
5V DC
REC
PB
AUDIO LPF
PEAK DET.
CCA
AUDIO LIMIT
VCO
REC RF LPF
SW NOISE
PB LPF
PC
1.3MHZ BPF
1.7MHZ BPF
HOLD LEVEL
LINER SWITCH
DELAY
TP233
TP234
VR233
L FO ADJ
VR234
R FO ADJ
HIFI ENV.
TO IC301
AF PULSE
HIFI H
A FM REC
A FM PB
Q2901
MIX AMP
CURRENT AMP
CH1
CH2
REC ON
PB ON
L
H
AFM CH1 HEAD
AFM CH2 HEAD
NORM AGC
REC AMP
AMP 16dB
AMP 67dB
REC EQ
PB EQ
TP211
TP212
R/P HEAD
VR201 BIAS
T2001
Q2001
70KHZ TRAP
L2002
C2009
PHASE INVERT
Q2011
Q2004
AE BIAS OSC 70KHZ
AE HEAD
FE HEAD
ALWAYS 12V
Q2002
Q2502
Q2314
Q2008
LP H
REC H
REC 12V AD
RF CONV AGC
AUDIO OUT (RF CONV)
JK853 AUDIO OUT L
JK854 AUDIO OUT R
AD OUT L
AD OUT R
TO CN871
VCC
ST
R
L CH OUTPUT SELECT
R CH OUTPUT SELECT
LOGIC
SWITCH CONTROL
CS
CLOCK
DATA
A MUTE
TO SYSCON /SERVO
HIFI CS
S CLOCK
S DATA
BDA1-14805/TK4H-ETH2
K
J
I
H
G
F
E
D
C
B
A
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

2. CIRCUIT DIAGRAMS & PRINTED WIRING BOARDS (P.W.B.)

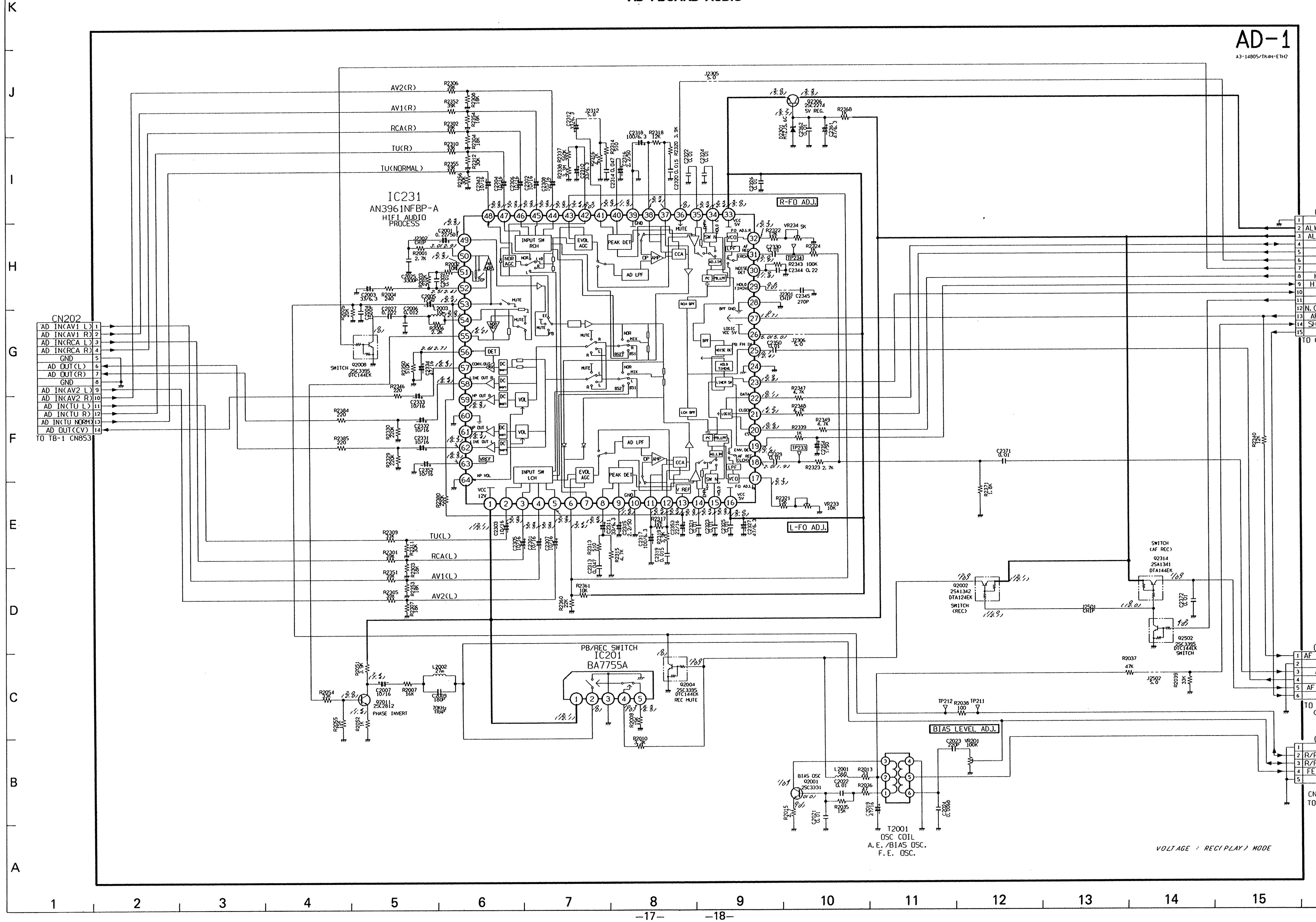
CP-1 P.W.B.


K
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
COMPL TN-A LOC.NO.6001~
COMPL AD-A LOC.NO.2001~
COMPL PWB VD-A LOC.NO.1001~
COMPL SV-A LOC.NO.3501~
COMPL SY-A LOC.NO.3001~
F5001 T2.5A H 250V
CN501
DL101
PW-A
TM-8(TM-7)
S3102 PLAY
S3106 STOP
S3107 PAUSE
S3103 REC
S3105 FF
S3101 REW
S3117 CH UP
S3118 CH DOWN
S3104 EJECT
S3108 POWER
CP-1
1AC4B10B24300C JCI-N1S

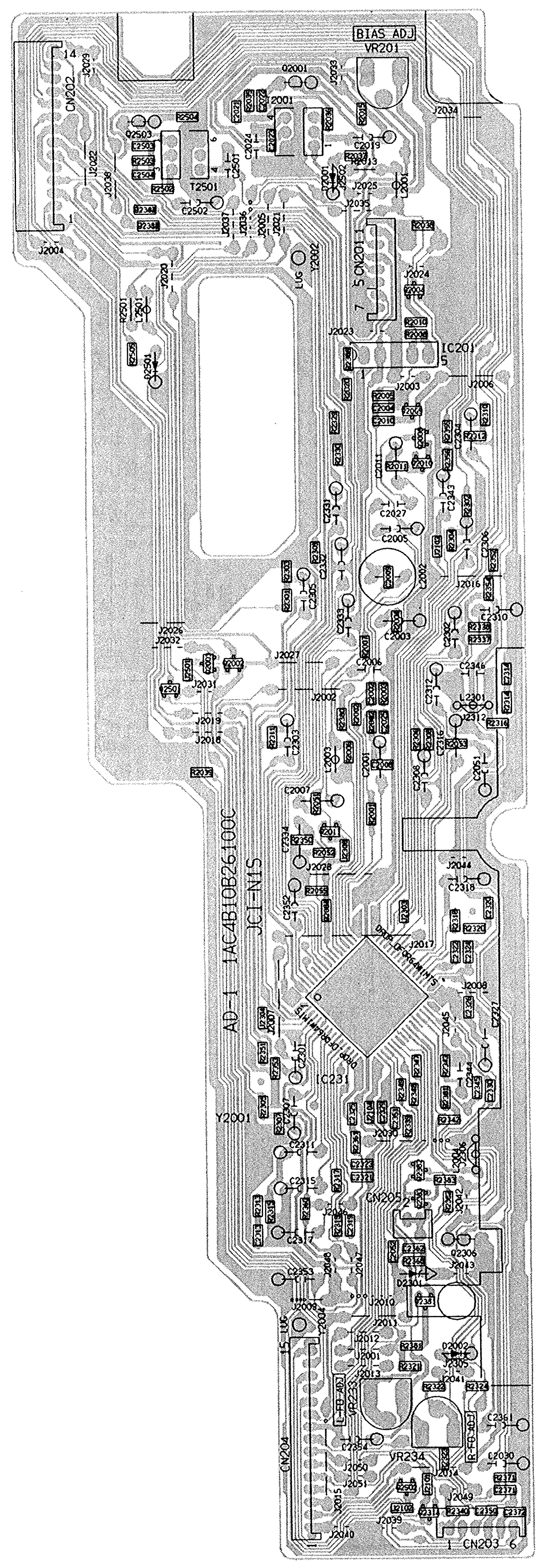
CP-1 BOARD (PW-A) POWER SUPPLY


PW-A
P1-14805/TK4H-NZ
F5001
T2.5A H 250V
J5001
10
J5002
10
CN501
C5001
0.22UF
AC250V
R5001
2.7M 1/2W
C5002
0.068UF
AC250V
L5001
D5001
DBC10G
J5017
5
C5005
2200P
AC400V
C5007
2200P
AC400V
C5010
47/400
J5012
12.5
C5021
2200P
500V
J5018
5
R5020
15K
R5021
15K
C5022
2200P
500V
R5022
15K
C5025
100P
1KV
D5010
AP01
R5002
470K
R5003
470K
L5010 B.C.
C5020 100P/1KV
(2/2)
D5013
PC120FB
PHOTO
COUPLER
R5005
180K
R5014 47
Q5002
2SC2274F,KF
DRIVE
SWITCHING
Q5001
2SK1460
R5006
10K
Q5003
2SA984F,KF
DRIVE
CONTROL
Q5004
2SC2274F,KF
C5017
390P
R5007
10K
R5009
56K
R5008
10K
C5023
47P
C5015
3300P
R5012
1.8K
D5004
1SS244
D5006
1SS244
C5011
0.1/50
D5003
1SS244
T5001
D5105
AG01
PR511 F25
R5121
9.1
C5110
220/6.3V
(YXB)
D5103 1SS244
C5108
22/50
(YXB)
C5109
47/35
(YXB)
R5104
2.7K
D5109
MTZJ5.6C
D5104
1SS244
R5120
4.7
REG.
Q5102
2SC2274F,KF
5.8
5.0
5.6
R5115
750
C5116
3.3/50
D5108
MTZJ5.6C
REG.
Q5101 2SC2274F,KF
5.8
5.0
5.6
R5116
560
D5112
MTZJ5.6C
HEATER +
HEATER -
ALWAYS 40V
ALWAYS -23V
SWD 5V
ALWAYS 5V
GND
J5101
5
D5102
RL2Z
L5102
B.C.
L5101
B.C.
D5101
RK36
R5112 3.6K
D5110
DSK10C
ERA15-02A
ALWAYS 13V
ALWAYS 5.8V
ALWAYS 12V
C5101
1000/6.3(YXB)
C5102
1000/6.3
C5124
0.22/50
C5105
470/16.25(YXB)
C5106
1000/16
R5114 100
R5101
330
D5013
(1/2)
PHOTO
COUPLER
R5123
2.7K
R5135 680
C5135
0.1/50
REG.
IC511
L5431
R5102
470
R5111
560
R5103
560
IC512
PQ12RF11
1
2
4
3
REGULATOR
C5113
330/16
Q5103
2SA1345
DTA144ES
SWITCH
Q5104
2SC3399
DTC144ES
INV.
POWER UP
GND
VOLTAGE : STOP MODE
K
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

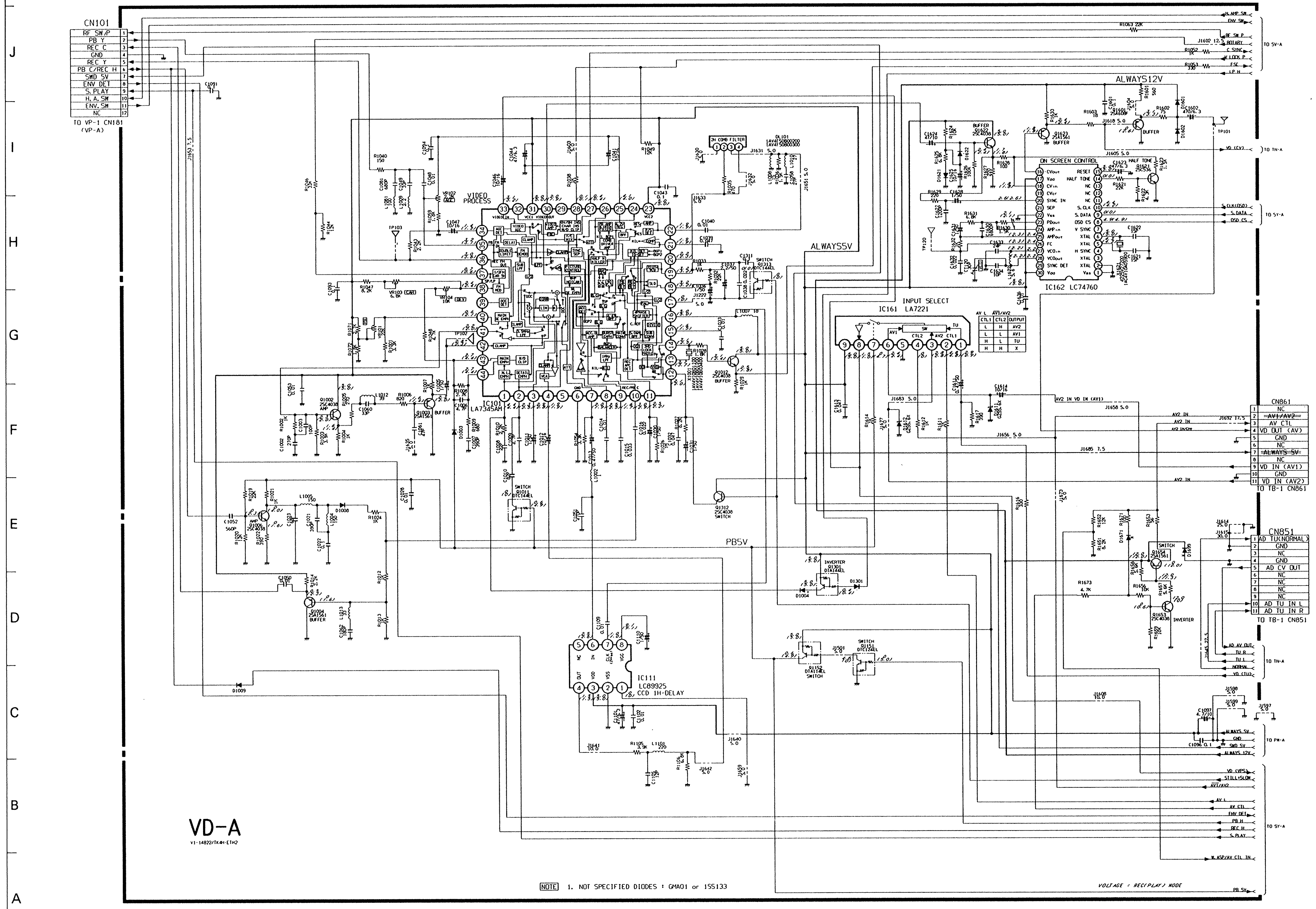
AD-1 BOARD AUDIO


AD-1
IC231
AN3961NFBP-A
HIFI AUDIO PROCESS
CN202
AD IN(AV1 L) 1
AD IN(AV1 R) 2
AD IN(RCA L) 3
AD IN(RCA R) 4
GND 5
AD OUT(L) 6
AD OUT(R) 7
GND 8
AD IN(AV2 L) 9
AD IN(AV2 R) 10
AD IN(TU L) 11
AD IN(TU R) 12
AD IN(TU NORM) 13
AD OUT(CV) 14
TO TB-1 CN853
AV2(R)
AV1(R)
RCA(R)
TU(R)
TU(NORMAL)
TU(L)
RCA(L)
AV1(L)
AV2(L)
CN204
1 GND
2 ALWAYS 5.8V
3 ALWAYS 12V
4 S.DATA
5 S.CLK
6 A.MUTE
7 LP H
8 HIFI CS
9 HIFI ENV.
10 HIFI H
11 REC H
12 N.C.
13 AF SW. P.
14 SHORT TEST
15 PB 5V
TO CP-1 (SY-A) CN306
TO CP-1 (SY-A) CN308
TO CP-1(SY-A)
R-FO ADJ.
L-FO ADJ.
5V REG.
CN203
1 AF SW. PULSE
2 GND
3 AF REC
4 AF PB
5 AF REC 12V
6 PB 5V
TO VP-1 CN291 (AP-A)
CN201
1 N.C.
2 R/P HEAD(P)
3 R/P HEAD(R)
4 FE.AE HEAD
5 GND
TO MC-5 CN841 Pin3-6
TO R/P HEAD
PB/REC SWITCH
IC201
BA7755A
Q2004 2SC3395 DTC144EK REC MUTE
Q2011 2SC2812 PHASE INVERT
SWITCH (AF REC) Q2314 2SA1341 DTA144EK
Q2002 2SA1342 DTA124EK SWITCH (REC)
Q2502 2SC3395 DTC144EK SWITCH
BIAS LEVEL ADJ.
BIAS OSC Q2001 2SC3331
T2001 OSC COIL A.E./BIAS OSC. F.E. OSC.
VOLTAGE : REC(PLAY) MODE
K
J
I
H
G
F
E
D
C
B
A
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

AD-1 P.W.B.


BIAS ADJ.
VR201
IC201
AD-1 1AC4B10B2610C
JC1-N15
IC231
CN204
CN203
VR234
16 17 18 19 20 21 22 23

CP-1 BOARD (VD-A) VIDEO

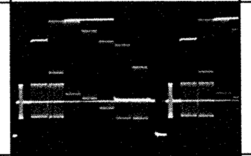
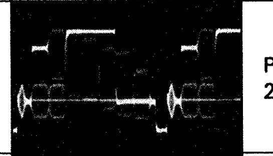
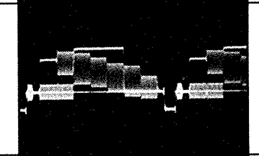
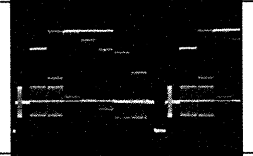
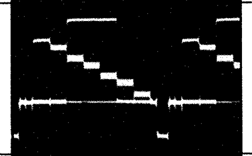
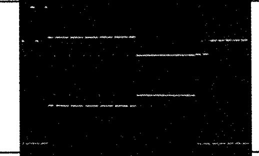
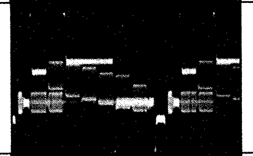
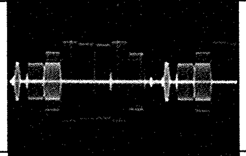
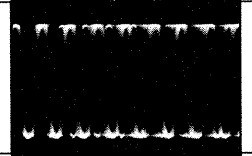
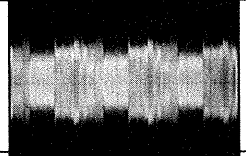
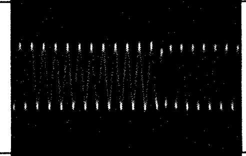
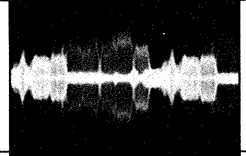
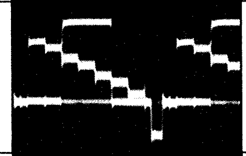
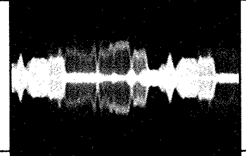
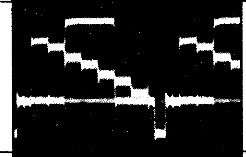
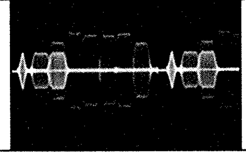
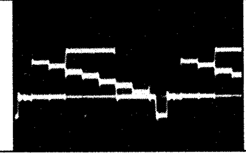

CN101
RF SW/P
PB Y
REC C
GND
REC Y
PB C/REC H
SMD 5V
ENV DET
S.PLAY
H.A.SW
ENV.SW
NC
TO VP-1 CN181 (VP-A)
VIDEO PROCESS
IC101 LA7???H
ALWAYS12V
ALWAYS5V
PB5V
ON SCREEN CONTROL
IC162 LC74760
INPUT SELECT
IC161 LA7221
IC111 LC89925 CCD 1H-DELAY
CN861
TO TB-1 CN861
CN851
TO TB-1 CN851
TO 5V-A
TO 1N-A
TO PW-A
VD-A

NOTE 1. NOT SPECIFIED DIODES : GMA01 or 1SS133

VOLTAGE : REC/PLAY MODE

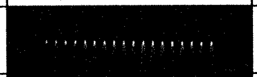
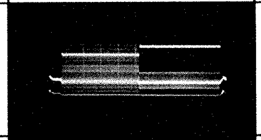
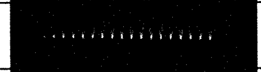
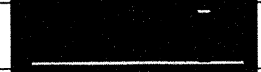
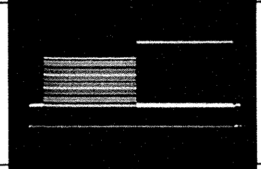
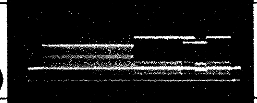
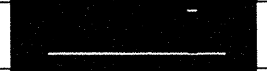
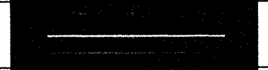
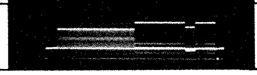
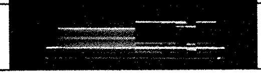
VIDEO CIRCUIT WAVEFORMS

WF-V-TE

TEST LOCATION	WAVEFORM	MODE/LEVEL	TEST LOCATION	WAVEFORM	MODE/LEVEL
IC101 Pin 33 (VIDEO IN)		REC, EE 1 Vp-p	IC101 Pin 30 (VIDEO OUT)		PB 2.5 Vp-p
IC101 Pin 41		REC, EE 0.6 Vp-p	IC101 Pin 30 (VIDEO OUT)		REC, EE 2 Vp-p
IC101 Pin 42		REC, EE 0.5 Vp-p	IC101 (UPPER) Pin 30 (LOWER) Pin 28		STILL (UPPER) 2 Vp-p (LOWER) 5 Vp-p
IC101 Pin 43		REC, EE 1.2 Vp-p	IC101 Pin 10 (REC CHROMA OUT)		REC, EE 0.4 Vp-p
IC101 Pin 36 (REC FM OUT)		REC, EE 1.0 Vp-p	Q1006 Base (PB CHROMA)		PB 0.3 Vp-p
IC101 Pin 35 (PB FM IN)		PB 0.3 Vp-p	IC101 Pin 10 (PB CHROMA IN)		PB 0.2 Vp-p
IC101 Pin 41		PB 0.5 Vp-p	IC101 Pin 20		PB 1.0 Vp-p
IC101 Pin 42		PB 0.5 Vp-p	IC101 Pin 26		PB 0.6 Vp-p
IC101 Pin 7/4		PB 0.3 Vp-p			

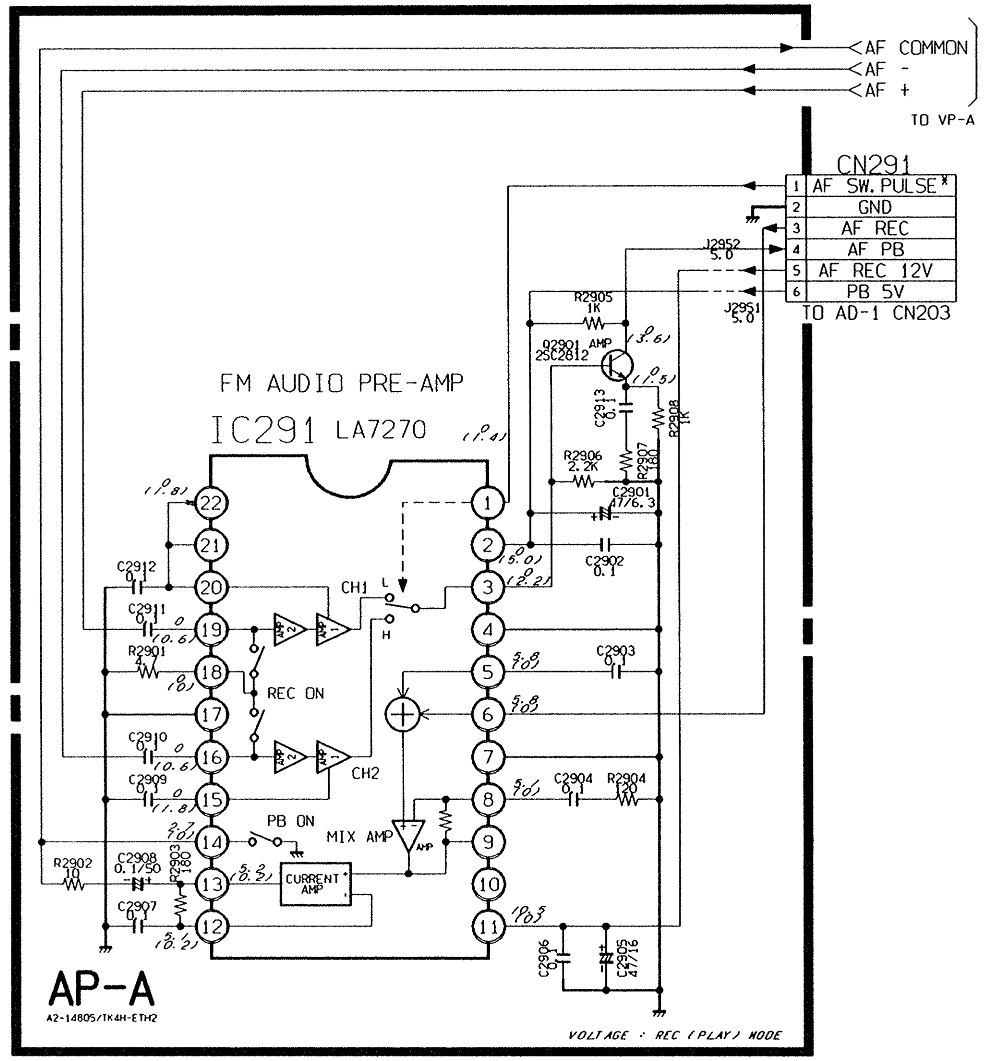
ON SCREEN (IC162) WAVEFORMS

(MODE: REC EE/ON SCREEN)

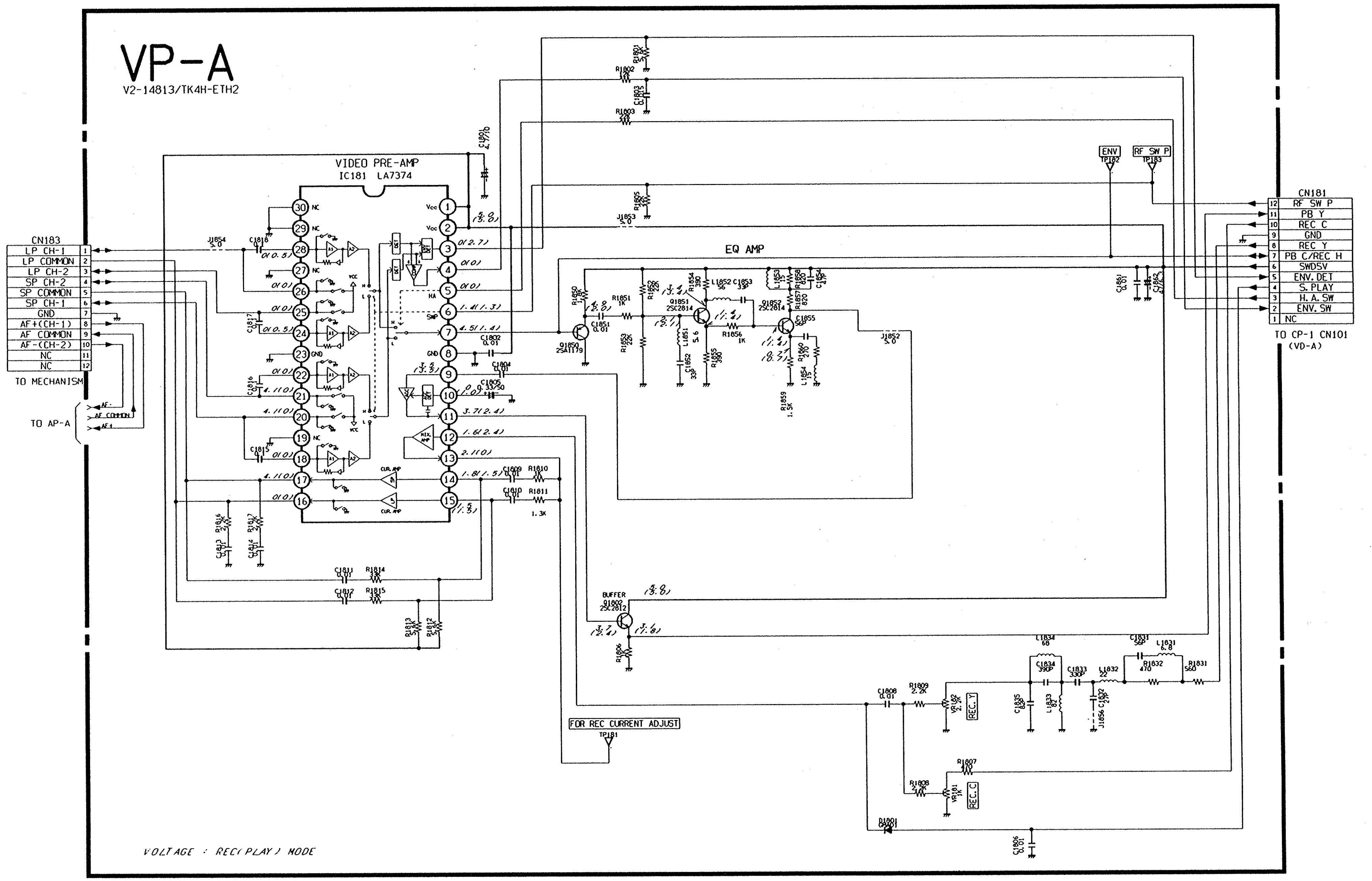
TEST LOCATION	WAVEFORM	LEVEL	TEST LOCATION	WAVEFORM	LEVEL
Pin 5 (17.7MHz X-TAL)		2Vp-p	Pin 19 (CV cr)		2Vp-p
Pin 6 (17.7MHz X-TAL)		3Vp-p			
Pin 14 (HALF TONE)		5Vp-p	Pin 20 (SYNC IN)		2Vp-p
Pin 16 (VIDEO OUT: WITH ON SCREEN)		2Vp-p			
Pin 14 (HALF TONE)		5Vp-p	Pin 23 (PD OUT)		4.5Vp-p
Pin 18 (VIDEO IN)		2Vp-p	Pin 16 (VIDEO OUT)		2Vp-p

WF-UFO-TP4

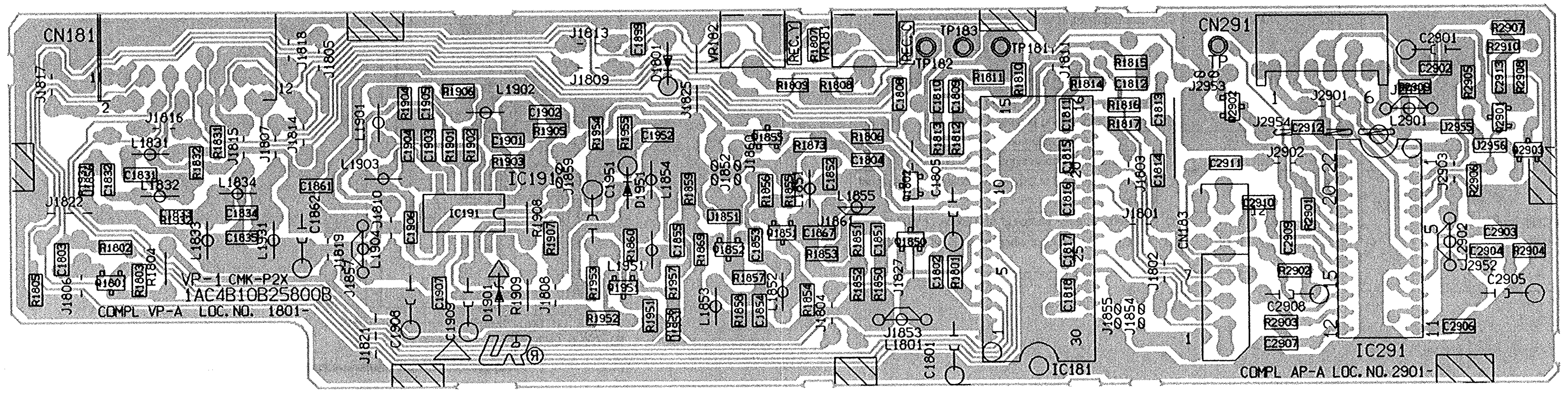
VP-1 BOARD (AP-A) AUDIO PRE-AMP


AP-A
A2-14805/TK4H-ETH2
FM AUDIO PRE-AMP
IC291 LA7270
CH1
CH2
REC ON
PB ON
MIX AMP
CURRENT AMP
Q2901 AMP 2SC2812
AF COMMON
AF -
AF +
TO VP-A
CN291
1 AF SW. PULSE
2 GND
3 AF REC
4 AF PB
5 AF REC 12V
6 PB 5V
TO AD-1 CN203
J2952 5.0
J2951 5.0
VOLTAGE : REC (PLAY) MODE

VP-1 BOARD (VP-A) VIDEO PRE-AMP


VP-A
V2-14813/TK4H-ETH2
VIDEO PRE-AMP
IC181 LA7374
EQ AMP
BUFFER
ENV TP182
RF SW P TP183
CN183
LP CH-1
LP COMMON
LP CH-2
SP CH-2
SP COMMON
SP CH-1
GND
AF+(CH-1)
AF COMMON
AF-(CH-2)
NC
NC
TO MECHANISM
AF-
AF COMMON
AF+
TO AP-A
CN181
12 RF SW P
11 PB Y
10 REC C
9 GND
8 REC Y
7 PB C/REC H
6 SWD5V
5 ENV. DET
4 S. PLAY
3 H. A. SW
2 ENV. SW
1 NC
TO CP-1 CN101 (VD-A)
FOR REC CURRENT ADJUST
REC. Y
REC. C
VOLTAGE : REC(PLAY) MODE

VP-1 P.W.B.

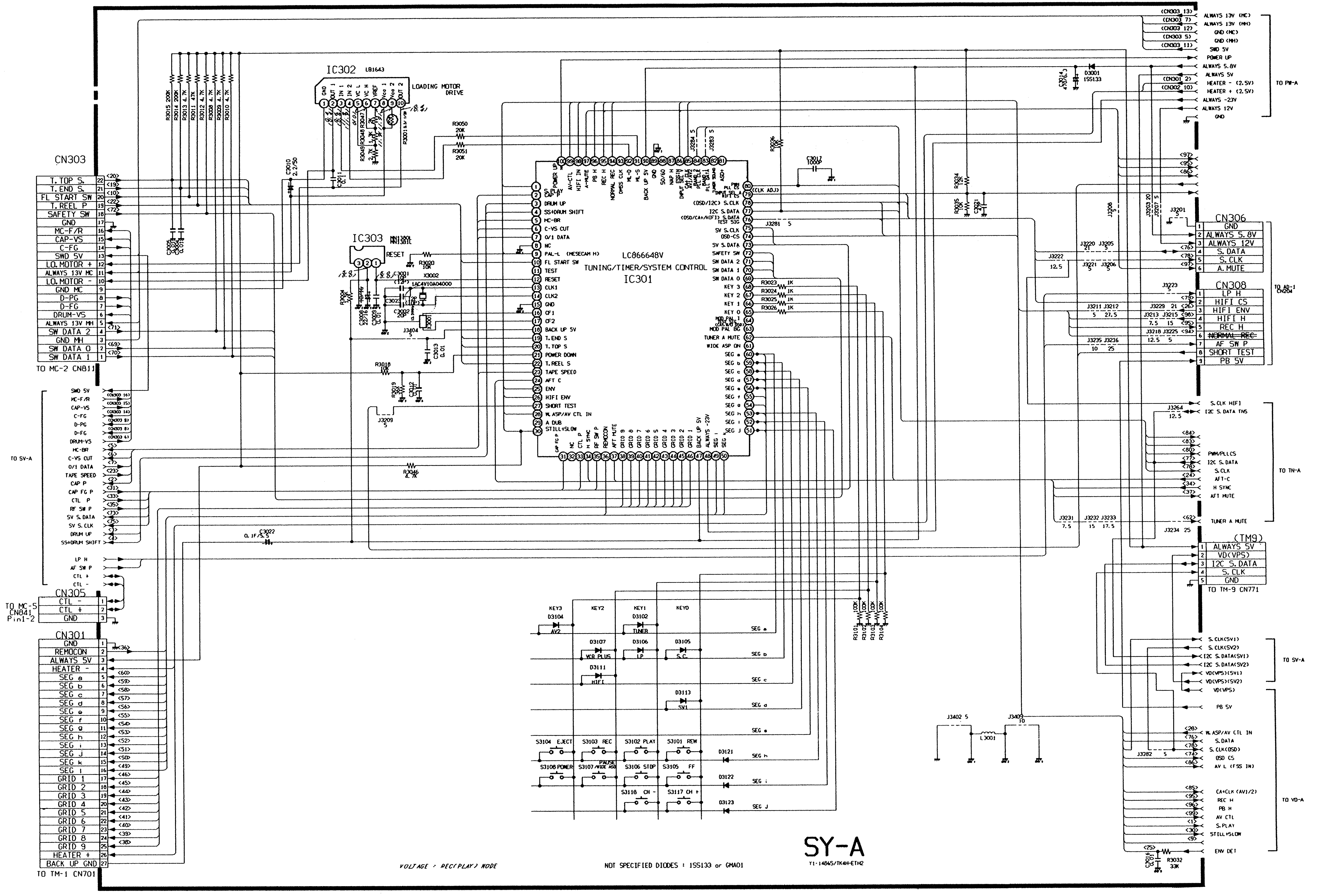

CN181
CN291
IC191
IC181
IC291
VP-1 CMK-P2X
1AC4B10B2580OB
COMPL VP-A LOC. NO. 1801-
COMPL AP-A LOC. NO. 2901-

IC301 SYSTEM CONTROL,TIMER, & TUNING CONTROL MPU PIN FUNCTIONS TABLE

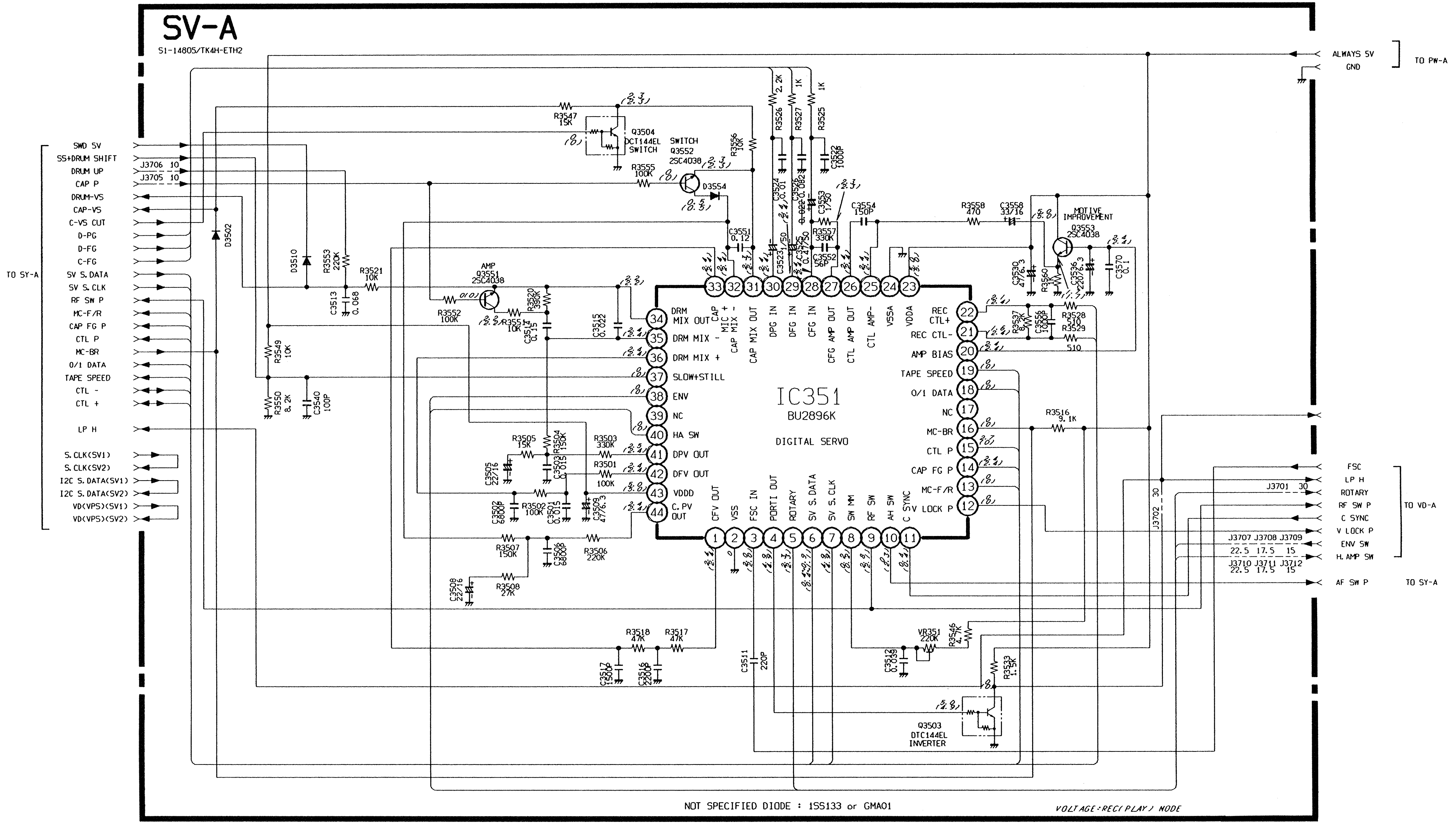
No.	Name	I/O	I/O Signal Function
1	S - PLAY	O	Signal for indicating CUE , REV , STILL and SLOW modes.
2	CAP P.	O	Gain down control for Head Motor Amplifier at SLOW mode.
3	DRUM UP	O	Head drum motor rotation speed up signal.
4	SS + DRUM SHIFT	O	Signal for indicating SLOW/STILL modes and alternation of drum motor control data. (3 value voltage)
5	MC - BR	O	Brake signal for capstan motor.
6	C - Vs CUT	O	Cut off for capstan motor control voltage in SLOW / STILL modes.
7	0 / 1 DATA	I	CTL pulse duty detection signal input. Used for VISS detection.
8	-	-	-
9	PAL- L(MESECAM H)	I	Color system indication signal input.
10	FL- START SW	I	Switch input indicating start of cassette loading or discharge by cassette mechanism.
11	-	-	-
12	RESET	I	Initial reset terminal for this IC.
13	CLK 1	-	Clock OSC during power failures.
14	CLK 2	-	Frequency is 32.768kHz.
15	VSS	-	Ground terminal
16	CF 1	-	IC clock OSC terminal.
17	CF 2	-	Frequency is 13.31MHz.
18	VDD	-	IC power supply terminal.(5Vdc)
19	T. END S.	I	Sensor signal input for tape end detection.
20	T. TOP S.	I	Sensor signal input for tape beginning detection.
21	POWER DOWN	I	Power failure detection terminal.
22	T. REEL S.	I	Pulse input for detection of take-up reel table rotation.
23	TAPE SPEED	I	Input of result of tape speed discrimination by digital servo IC.
24	AFT - C	I	Tuner AFT S-curve signal input for tuner AFT control.
25	ENV.	I	Video head envelope detection signal input for ATR function.
26	HIFI ENV.	I	Hi-Fi audio head envelope detection signal input for ATR function. (Hi-Fi model only)
27	SHORT TEST	I	REC mode indication signal input (REC 5V).
28	W. ASP/ AV CTL IN	I	AV source selection signal input from AV terminal.
29	A DUB	O	Signal for indicating audio dubbing mode.
30	STILL + SLOW	O	STILL or SLOW modes indication signal output.
31	C - FG P.	I	FG signal input of capstan motor.
32	-	-	-
33	CTL P.	I	CTL head recording / playback pulse signal input.
34	H SYNC	I	Sync. signal input for existing channel discrimination and TV system discrimination.
35	RF SW P.	I	RF switching pulse input, created by head drum PG.
36	REMOCON	I	Remote control signal input.
37	AFT MUTE	O	"H" output during TU AFT mute. (V-syn model only)
38	G9	O	Display grid outputs (FLD).
39	G8	O	
40	G7	O	
41	G6	O	
42	G5	O	
43	G4	O	
44	G3	O	
45	G2	O	
46	G1	O	
47	VDD	-	IC power supply input.(5Vdc)
48	V LOAD	O	-23V input for FLD drive.
49	SEG l	O	Display segment outputs (FLD). (Includes key-scan output)
50	SEG k	O	
51	SEG j	O	
52	SEG i	O	
53	SEG h	O	
54	SEG g	O	
55	SEG f	O	Display segment outputs (FLD). (Includes key-scan output)
56	SEG e	O	
57	SEG d	O	
58	SEG c	O	
59	SEG b	O	
60	SEG a	O	
61	WIDE ASP ON	O	Signal for wide aspect TV-system indication.
62	TUNER A MUTE	O	Signal for disable tuner-audio output.
63	RF PAL BG	O	Signal for RF output TV-system setting (PAL - BG).
64	RF PAL I	O	Signal for RF output TV-system setting (PAL - I).
65	KEY IN 0	I	Operation key data inputs.
66	KEY IN 1	I	
67	KEY IN 2	I	
68	KEY IN 3	I	
69	SW DATA 0	I	3-bit data indicating operation position of mechanism.
70	SW DATA 1	I	
71	SW DATA 2	I	
72	SAFETY SW	I	Terminal for accidental erasure prevention switch. No operation to record mode while "HIGH" is input.
73	SV S. DATA	O	Output 8-bit X 4 serial data giving operation mode and tracking data,etc., to digital servo IC.
74	OSD CS	O	Chip enable (access) signal output to OSD IC.
75	SV S. CLK	O	The clock pulse for digital servo IC.
76	S. DATA (OSD / CH+ / Hi-Fi)	I/O	Terminal for communication of respective data with OSD IC, CH+ control IC, and Hi-Fi audio IC.
77	I2C S.DATA	I/O	Data exchange with tuning memory IC and VPS IC.
78	S. CLK (OSD/I2C)	O	The clock pulse for OSD IC and tuning memory IC.
79	INPUT SEL A	O	Signal for selecting audio input source.
	HIFI CS	O	Chip enable (access) signal to Hi-Fi audio IC.
80	PLL CS	O	Chip enable signal output to tuner PLL tuning system IC. (F-syn model)
	TU PWM	O	Tuning voltage output (PWM signal). (V-syn model)
81	-	-	-
82	TU SOUND (I/BG)	O	TV system indication signal output (PAL I or BG).
83	BAND 1	O	Tuning band data(BAND 1 and 2 ; for V-syn model).
	PLL DATA	O	Data exchange with tuner PLL IC (for F-syn model).
84	BAND 2	O	BAND 1 and 2 ; (L,L)=VHF-LOW (L,H)=VHF-HIGH (H,L)=UHF (H,H)=SKIP. (for V-syn model)
	PLL CLK	O	The clock for PLL IC of tuner unit (for F-syn model).
85	CH+ CLK	O	The clock for CH+ input/output source selection IC.
	AV1 / AV2	O	Signal for selecting AV-input (video/audio) source.
86	INPUT SEL V	O	Signal for selecting video input source.
	FSS IN	I	CH+ mode control signal input (CH+ model).
87	NAP H	O	" H " output during NTSC (NAP) playback mode.
88	50 / 60	O	" LOW " output during NTSC (NAP) mode. (60 field mode)
89	VSS	-	IC ground terminal.
90	VDD	-	IC power supply input.(5Vdc)
91	ML- S	O	Loading motor rotation speed (low / medium / high) indication signal.
92	ML- D	O	Loading motor rotation direction (FWD / REV) indication signal.
93	-	-	-
94	NORMAL AD REC	O	Signal for indicating normal audio recording.
95	REC H	O	Signal for indicating recording mode.
96	PB H	O	Signal for indicating playback mode.
97	A MUTE	O	"H" output for disable audio output signal.
98	HIFI IN	I	Hi-Fi mode indication signal input from audio IC.
99	AV CTL	O	AV terminal (pin8 of 21pins AV socket) control signal output.
	ANT / VTR	O	Selection the RF source of ANTENNA or VTR.
100	POWER UP	O	"HIGH" output except when power is off. Indicating that power is ON.

TK14HTTS-A

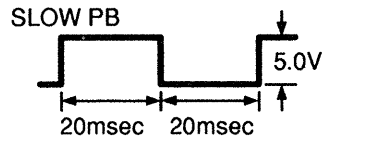
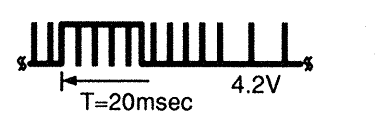
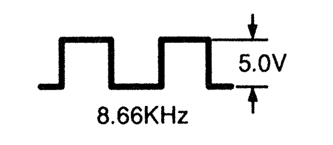
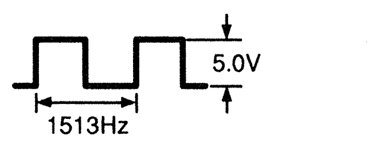
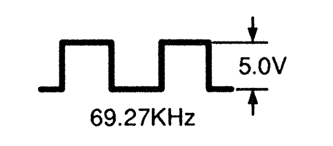
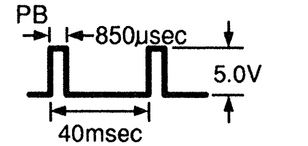
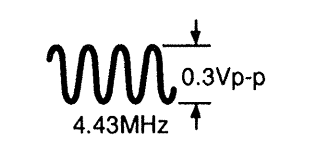
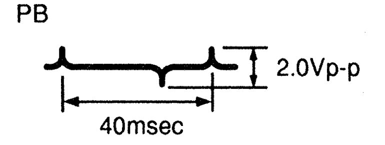
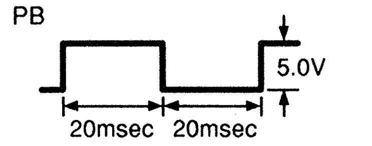
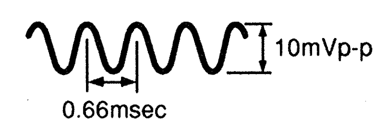
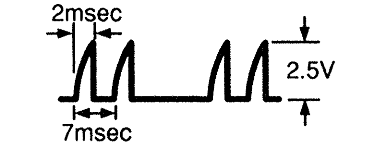
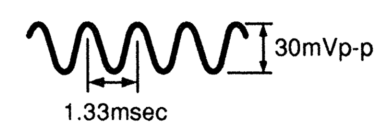
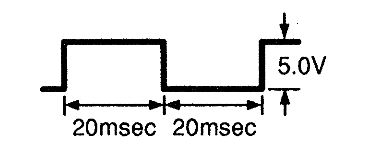
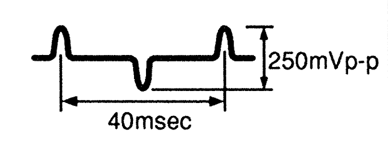
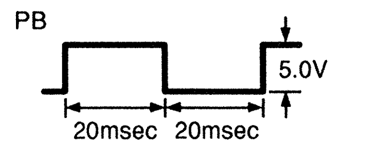
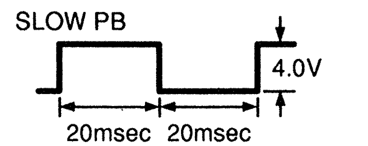
CP-1 BOARD (SY-A) SYSTEM CONTROL



CP-1 BOARD (SV-A) SERVO

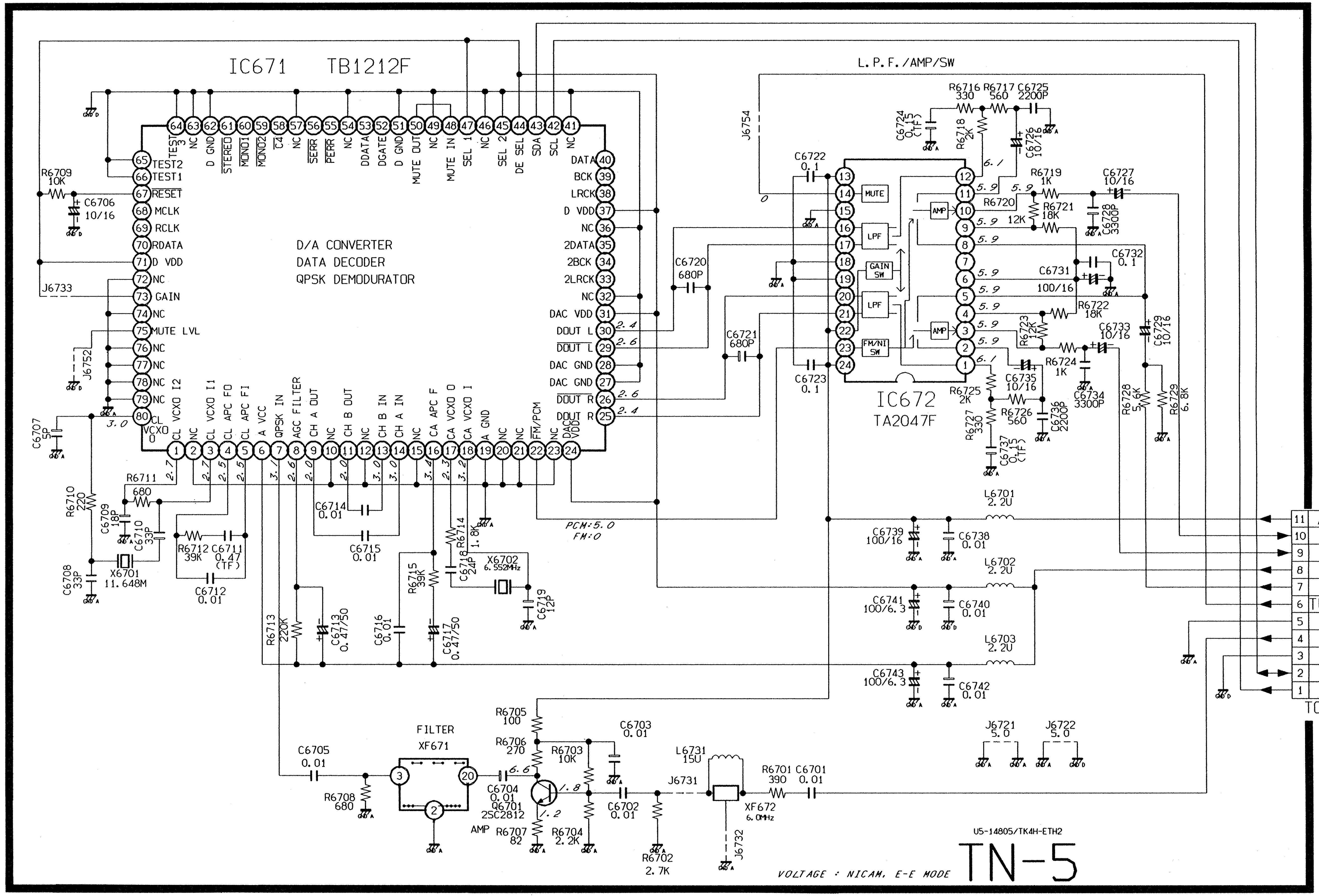

SV-A
S1-14805/TK4H-ETH2
ALWAYS 5V
GND
TO PW-A
SWD 5V
SS+DRUM SHIFT
DRUM UP
CAP P
DRUM-VS
CAP-VS
C-VS CUT
D-PG
D-FG
C-FG
SV S.DATA
SV S.CLK
RF SW P
MC-F/R
CAP FG P
CTL P
MC-BR
0/1 DATA
TAPE SPEED
CTL -
CTL +
LP H
TO SY-A
S.CLK(SV1)
S.CLK(SV2)
I2C S.DATA(SV1)
I2C S.DATA(SV2)
VD(VPS)(SV1)
VD(VPS)(SV2)
J3706
J3705
D3502
D3510
R3553 220K
C3513 0.068
R3521 10K
R3549 10K
R3550 8.2K
C3540 100P
Q3504 DCT144EL SWITCH
Q3552 2SC4038 SWITCH
R3547 15K
R3555 100K
D3554
AMP Q3551 2SC4038
R3552 100K
R3551 10K
R3520 330K
C3514 0.15
C3515 0.022
R3526 2.2K
R3527 1K
R3525 1K
R3556 10K
C3551 0.12
C3554 150P
C3552 56P
R3557 330K
R3558 470
C3558 33/16
MOTIVE IMPROVEMENT Q3553 2SC4038
C3570 0.1
R3528 510
R3529 510
R3516 9.1K
IC351
BU2896K
DIGITAL SERVO
DRM MIX OUT
DRM MIX -
DRM MIX +
SLOW+STILL
ENV
NC
HA SW
DPV OUT
DFV OUT
VDDD
C.PV OUT
CAP MIC +
CAP MIX -
CAP MIX OUT
DPG IN
DFG IN
CFG IN
CFG AMP OUT
CTL AMP OUT
CTL AMP-
VSSA
VDDA
REC CTL+
REC CTL-
AMP BIAS
TAPE SPEED
0/1 DATA
NC
MC-BR
CTL P
CAP FG P
MC-F/R
V LOCK P
CFV OUT
VSS
FSC IN
PORT1 OUT
ROTARY
SV S.DATA
SV S.CLK
SW MM
RF SW
AH SW
C SYNC
R3505 15K
R3504 150K
R3503 330K
R3501 100K
R3502 100K
R3507 150K
R3506 220K
R3508 27K
R3518 47K
R3517 47K
C3511 220P
VR351 220K
R3546 4.7K
R3533 1.5K
Q3503 DTC144EL INVERTER
FSC
LP H
ROTARY
RF SW P
C SYNC
V LOCK P
ENV SW
H.AMP SW
AF SW P
TO VD-A
TO SY-A
J3701
J3702
J3707 J3708 J3709
22.5 17.5 15
J3710 J3711 J3712
22.5 17.5 15
NOT SPECIFIED DIODE : 1SS133 or GMA01
VOLTAGE: REC(PLAY) MODE

SERVO CIRCUIT WAVEFORMS (IC351:BU2896 Series)

TEST LOCATION	WAVEFORM & MODE/LEVEL	TEST LOCATION	WAVEFORM & MODE/LEVEL
Pin 40 (H.A.SWITCHING)	 SLOW PB 5.0V 20msec 20msec	Pin 11 (COMPOSITE SYNC INPUT)	 4.2V T=20msec
Pin 42 (PWM)	 5.0V 8.66KHz	Pin 14 (C-FG PULSE)	 5.0V 1513Hz
Pin 41,44,1 (PWM)	 5.0V 69.27KHz	Pin 15 (CTL PULSE)	 PB 850μsec 5.0V 40msec
Pin 3 (FSC INPUT)	 0.3Vp-p 4.43MHz	Pin 26 (CTL AMP OUT)	 PB 2.0Vp-p 40msec
Pin 5 (ROTARY)	 PB 5.0V 20msec 20msec	Pin 28 (C-FG INPUT)	 10mVp-p 0.66msec
Pin 8 (D-PG MM)	 2msec 2.5V 7msec	Pin 29 (D-FG INPUT)	 30mVp-p 1.33msec
Pin 9 (RF SW PULSE)	 5.0V 20msec 20msec	Pin 30 (D-PG INPUT)	 250mVp-p 40msec
Pin 10 (AF SW PULSE)	 PB 5.0V 20msec 20msec	Pin 38 (ENV.SW INPUT)	 SLOW PB 4.0V 20msec 20msec

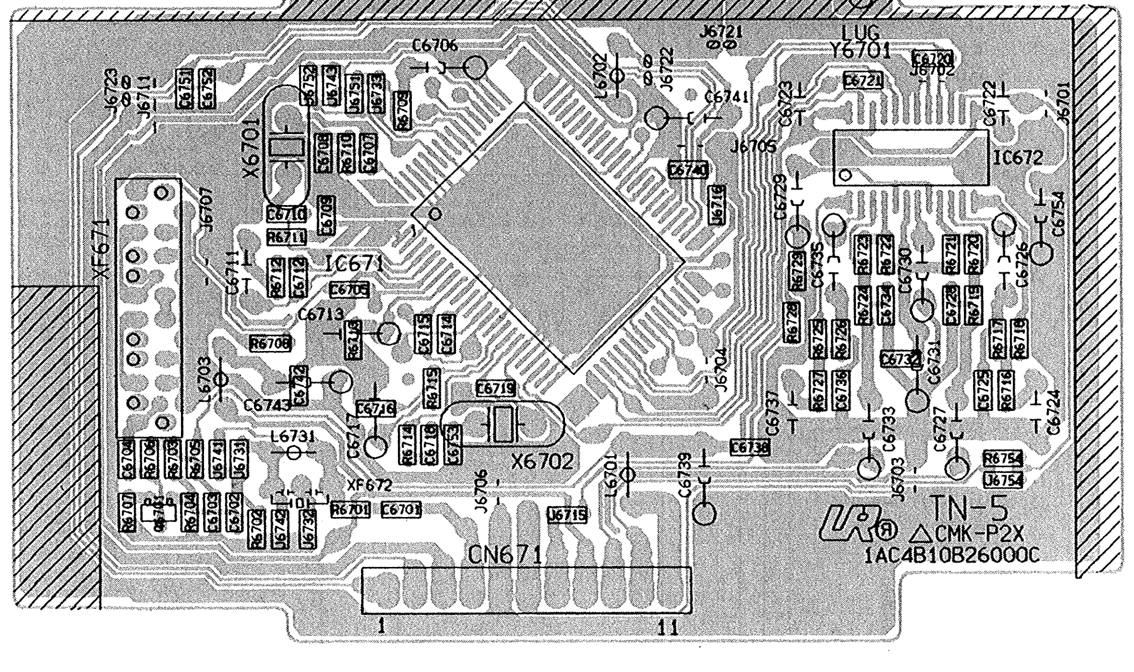
WF-S-CE6

TN-5 BOARD NICAM



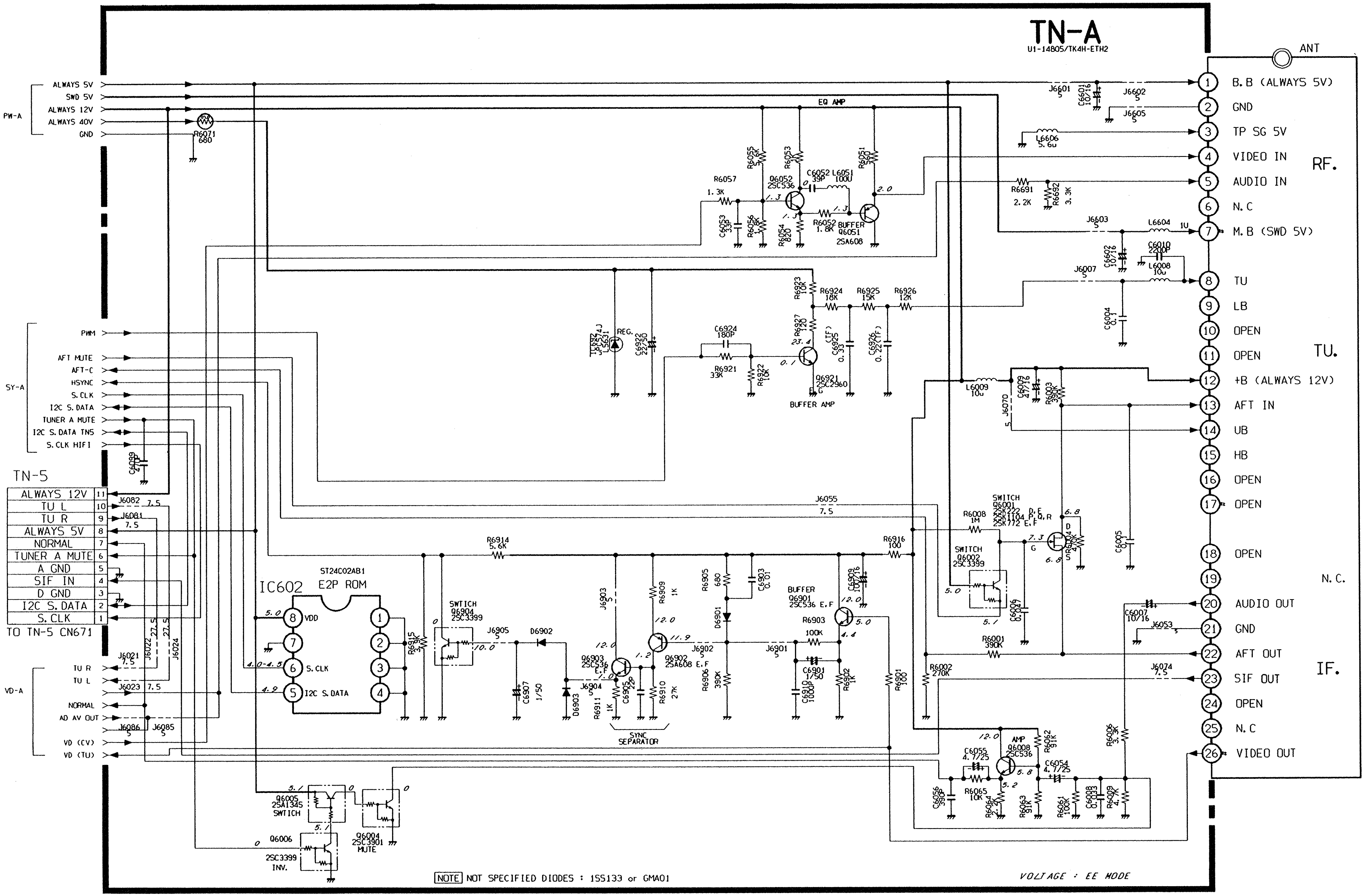
IC671 TB1212F
D/A CONVERTER
DATA DECODER
QPSK DEMODURATOR
L.P.F./AMP/SW
IC672
TA2047F
MUTE
AMP
LPF
GAIN SW
FM/NI SW
CN671
11 ALWAYS 12V
10 TU L OUT
9 TU R OUT
8 ALWAYS 5V
7 NORMAL
6 TUNER A MUTE
5 A GND
4 SIF IN
3 D GND
2 I2C S.DATA
1 S.CLK
TO CP-1(TN-A)
FILTER
XF671
Q6701
2SC2812
AMP
X6701
11.648M
X6702
6.552MHz
XF672
6.0MHz
L6701 2.2U
L6702 2.2U
L6703 2.2U
L6731 15U
J6721 5.0
J6722 5.0
PCM:5.0
FM:0
U5-14805/TK4H-ETH2
VOLTAGE : NICAM, E-E MODE
TN-5

TN-5 P.W.B.

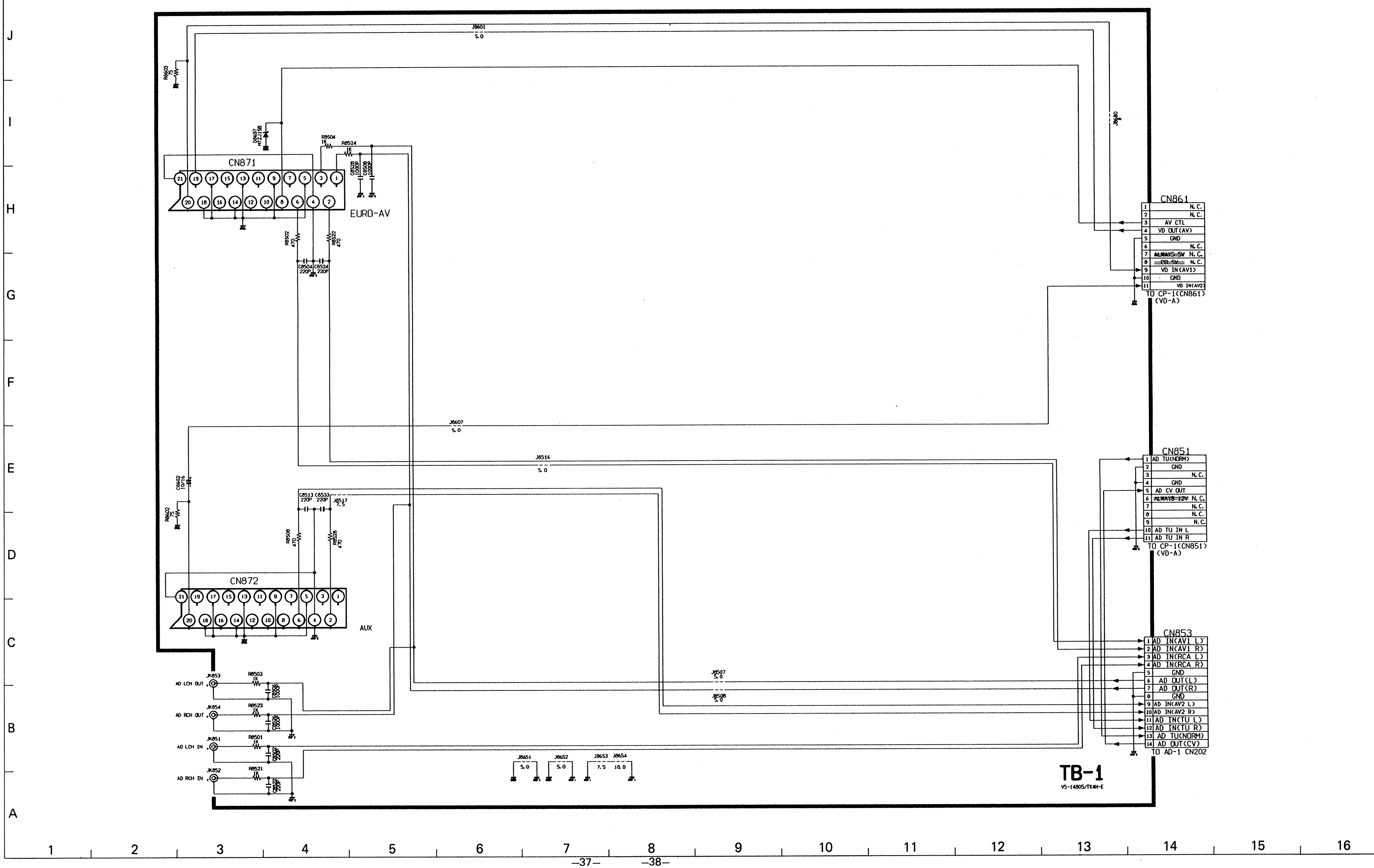


IC671
IC672
CN671
X6701
X6702
XF671
XF672
LUG
Y6701
TN-5
CMK-P2X
1AC4B10B26000C

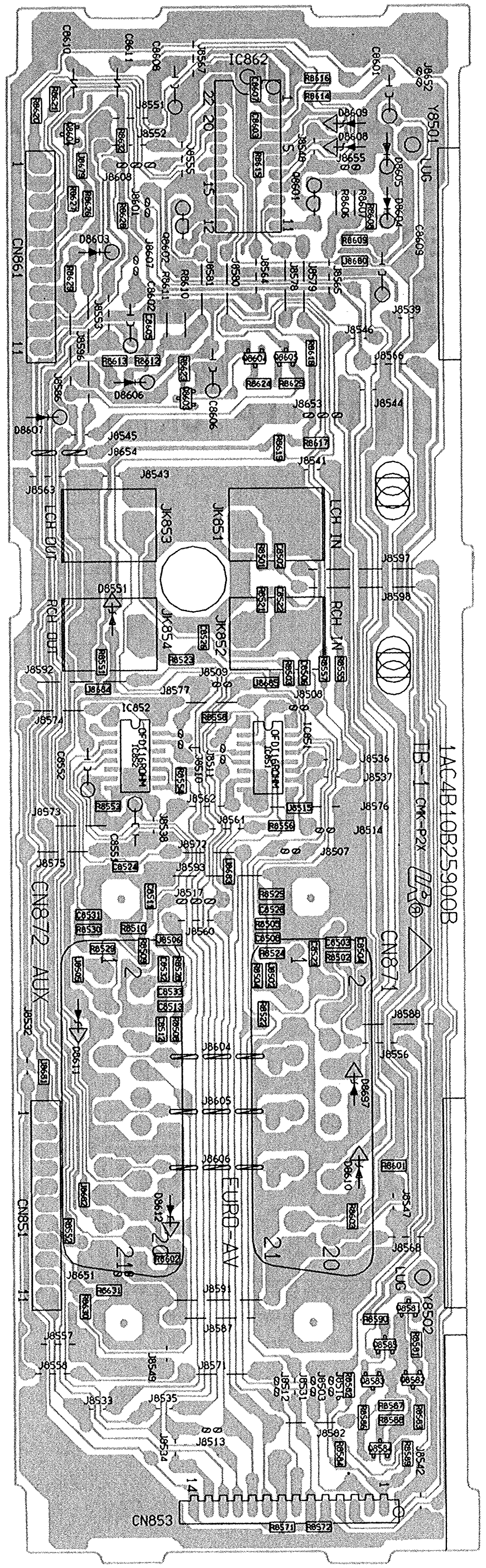
CP-1 BOARD (TN-A) TUNER IF CONNECTION


TN-A
U1-14805/TK4H-ETH2
ANT
PW-A
ALWAYS 5V
SWD 5V
ALWAYS 12V
ALWAYS 40V
GND
R6071 680
EQ AMP
R6057 1.3K
R6055
R6053
Q6052 2SC536
C6052 39P
L6051 100U
R6051
R6052 1.8K
BUFFER Q6051 2SA608
C6053
R6056
R6054 820
R6691 2.2K
R6692 3.3K
J6601
C6601 10/16
J6602
J6605
L6606 5.6U
J6603
L6604 1U
C6602 10/16
C6010 2200P
J6007
L6008 10U
C6004 0.1
B.B (ALWAYS 5V)
GND
TP SG 5V
VIDEO IN
AUDIO IN
N.C
M.B (SWD 5V)
RF.
TU
LB
OPEN
OPEN
TU.
+B (ALWAYS 12V)
AFT IN
UB
HB
OPEN
OPEN
OPEN
N.C.
AUDIO OUT
GND
AFT OUT
SIF OUT
IF.
OPEN
N.C
VIDEO OUT
SY-A
PWM
AFT MUTE
AFT-C
HSYNC
S.CLK
I2C S.DATA
TUNER A MUTE
I2C S.DATA TNS
S.CLK HIFI
C6939
IC6921 REG.
C6922 22/50
R6923
R6924 18K
R6925 15K
R6926 12K
C6924 180P
R6921 33K
R6922 10K
R6927 120
Q6921 2SC2960
BUFFER AMP
C6925 0.33
C6926 0.22
L6009 10U
J6070
C6009 47/16
R6003 390K
TN-5
ALWAYS 12V
TU L
TU R
ALWAYS 5V
NORMAL
TUNER A MUTE
A GND
SIF IN
D GND
I2C S.DATA
S.CLK
TO TN-5 CN671
J6082 7.5
J6081 7.5
J6055 7.5
SWITCH Q6001 2SK222 D.E 2SK1104 P.Q.R 2SK772 E.F
R6008 1M
SWITCH Q6002 2SC3399
R6004 47K
C6005 0.1
C6006 0.047
R6914 5.6K
R6916 100
ST24C02AB1
IC602 E2P ROM
VDD
S.CLK
I2C S.DATA
R6915 3.3K
SWTICH Q6904 2SC3399
J6905
D6902
C6907 1/50
D6903
J6903
R6909 1K
R6905 680
C6903 0.01
D6901
BUFFER Q6901 2SC536 E.F
C6909 10/16
R6903 100K
Q6903 2SC536 E.F
Q6902 2SA608 E.F
J6902
J6904
R6911 1K
C6902
R6910 27K
SYNC SEPARATOR
R6906 390K
J6901
C6901 1/50
C6910 1000P
R6902 1K
R6901 100
R6001 390K
R6002 270K
C6007 10/16
J6053
J6074 7.5
VD-A
TU R
TU L
NORMAL
AD AV OUT
VD (CV)
VD (TU)
J6021 7.5
J6022 27.5
J6023 7.5
J6024
J6086
J6085
Q6005 2SA1345 SWTICH
Q6004 2SC3901 MUTE
Q6006 2SC3399 INV.
AMP Q6008 2SC536
C6055 4.7/25
R6065 10K
C6056 390P
R6064
R6063 91K
R6062 91K
C6054 4.7/25
R6061 100K
C6008 0.01
R6009 4.7K
R6006 3.3K
NOTE NOT SPECIFIED DIODES : 1SS133 or GMA01
VOLTAGE : EE MODE
K
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

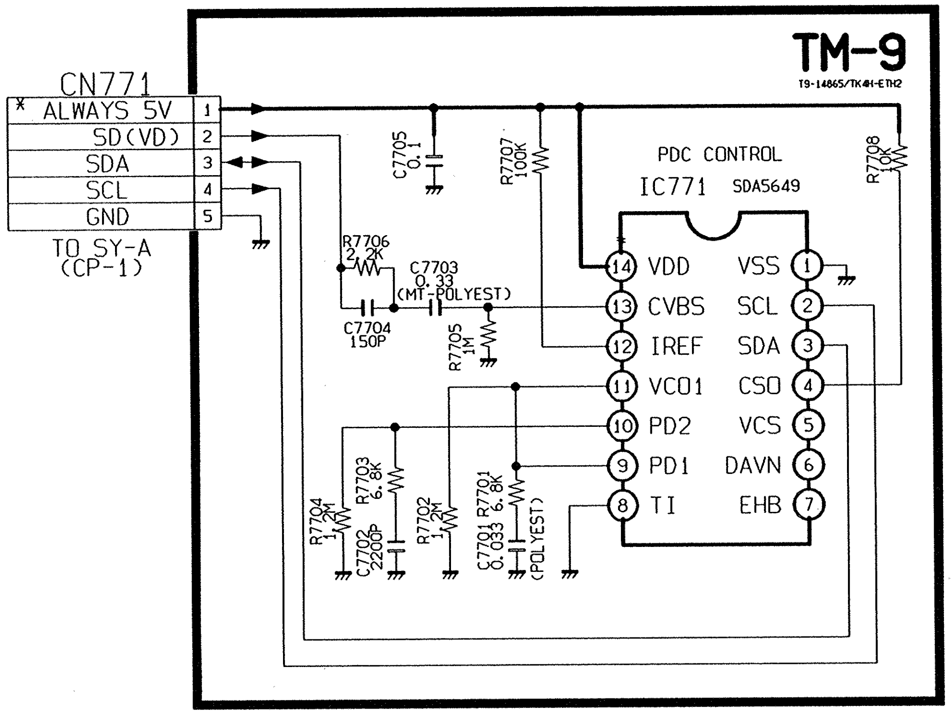
TB-1 BOARD TERMINAL


J8601
5.0
R8603
75
J8600
D8697
MTZJ15B
R8504
1K
R8524
1K
C8528
1000P
C8508
1000P
CN871
EURO-AV
R8502
470
R8522
470
C8504
220P
C8524
220P
CN861
1 N.C.
2 N.C.
3 AV CTL
4 VD OUT(AV)
5 GND
6 N.C.
7 ~~ALWAYS 5V~~ N.C.
8 ~~PR 5V~~ N.C.
9 VD IN(AV1)
10 GND
11 VD IN(AV2)
TO CP-1(CN861)
(VD-A)
J8607
5.0
J8516
5.0
C8642
10/16
R8602
75
C8513
220P
C8533
220P
J8517
7.5
R8508
470
R8526
470
CN851
1 AD TU(NORM)
2 GND
3 N.C.
4 GND
5 AD CV OUT
6 ~~ALWAYS 12V~~ N.C.
7 N.C.
8 N.C.
9 N.C.
10 AD TU IN L
11 AD TU IN R
TO CP-1(CN851)
(VD-A)
CN872
AUX
CN853
1 AD IN(AV1 L)
2 AD IN(AV1 R)
3 AD IN(RCA L)
4 AD IN(RCA R)
5 GND
6 AD OUT(L)
7 AD OUT(R)
8 GND
9 AD IN(AV2 L)
10 AD IN(AV2 R)
11 AD IN(TU L)
12 AD IN(TU R)
13 AD TU(NORM)
14 AD OUT(CV)
TO AD-1 CN202
JK853
AD LCH OUT
R8503
1K
C8506
1000P
JK854
AD RCH OUT
R8523
1K
C8526
1000P
JK851
AD LCH IN
R8501
1K
C8502
220P
JK852
AD RCH IN
R8521
1K
C8522
220P
J8507
5.0
J8508
5.0
J8651
5.0
J8652
5.0
J8653
7.5
J8654
10.0
TB-1
VS-14605/TK4H-E
K
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

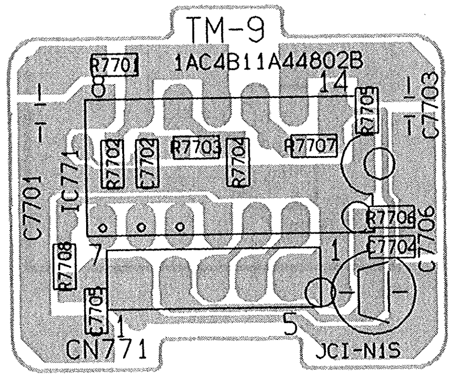
TB-1 P.W.B.


TB-1 CMK-P2X
1AC4B10B25900B
CN861
CN872 AUX
CN871
CN851
CN853
EURO-AV
IC862
IC852
IC851
JK851
JK852
JK853
JK854
LCH OUT
RCH OUT
LCH IN
RCH IN
LUG
Y8501
Y8502
D8551
D8603
D8606
D8607

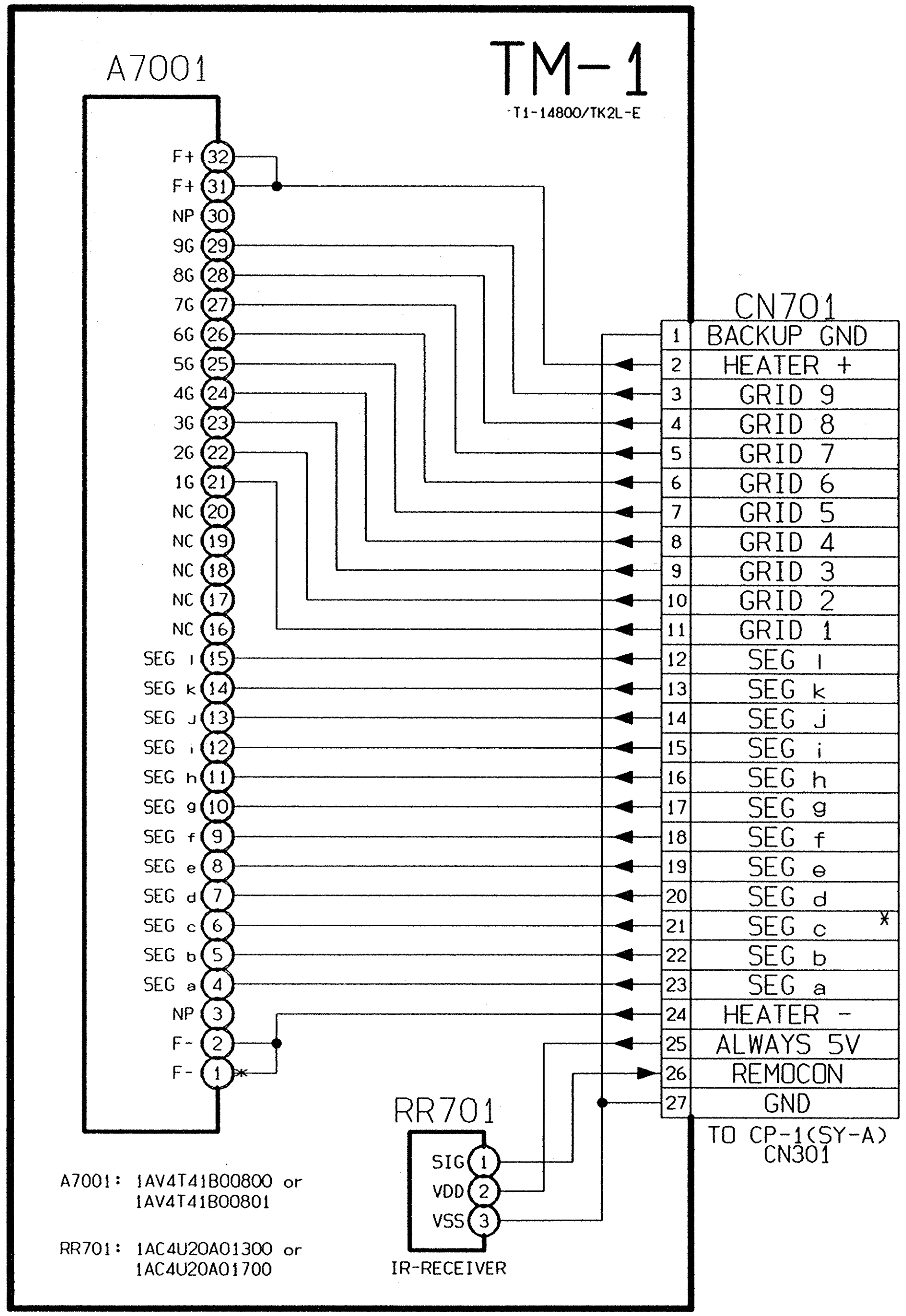
TM-9 BOARD PDC


TM-9
T9-1486S/TK4H-ETH2
CN771
* ALWAYS 5V 1
SD(VD) 2
SDA 3
SCL 4
GND 5
TO SY-A
(CP-1)
C7705 0.1
R7707 100K
R7708 10K
PDC CONTROL
IC771 SDA5649
R7706 2.2K
C7703 0.33 (MT-POLYEST)
C7704 150P
R7705 1M
R7703 6.8K
R7704 12K
C7702 2200P
R7702 12K
C7701 0.033 (POLYEST)
R7701 6.8K
14 VDD
13 CVBS
12 IREF
11 VCO1
10 PD2
9 PD1
8 TI
VSS 1
SCL 2
SDA 3
CSO 4
VCS 5
DAVN 6
EHB 7

TM-9 P.W.B.


TM-9
1AC4B11A44802B
R7701
R7702
C7702
R7703
R7704
R7707
R7705
C7703
C7701
IC771
R7706
C7704
C7706
R7708
C7705
CN771
JCI-N1S
1
5
7
8
14

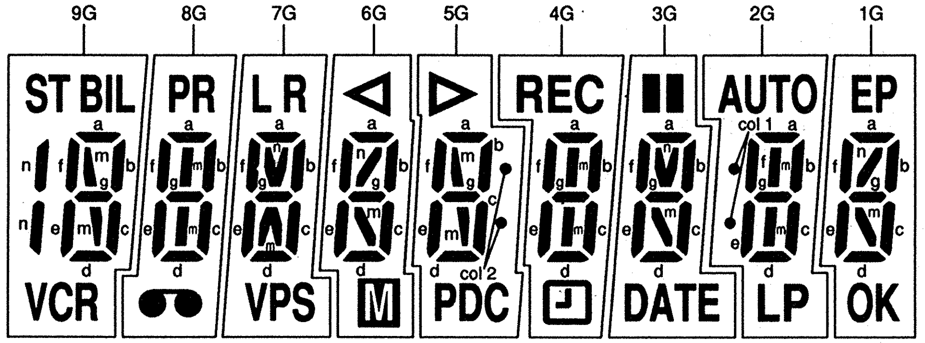
TM-1 BOARD DISPLAY (FLD)



A7001
TM-1
T1-14800/TK2L-E
F+ 32
F+ 31
NP 30
9G 29
8G 28
7G 27
6G 26
5G 25
4G 24
3G 23
2G 22
1G 21
NC 20
NC 19
NC 18
NC 17
NC 16
SEG l 15
SEG k 14
SEG j 13
SEG i 12
SEG h 11
SEG g 10
SEG f 9
SEG e 8
SEG d 7
SEG c 6
SEG b 5
SEG a 4
NP 3
F- 2
F- 1
CN701
1 BACKUP GND
2 HEATER +
3 GRID 9
4 GRID 8
5 GRID 7
6 GRID 6
7 GRID 5
8 GRID 4
9 GRID 3
10 GRID 2
11 GRID 1
12 SEG l
13 SEG k
14 SEG j
15 SEG i
16 SEG h
17 SEG g
18 SEG f
19 SEG e
20 SEG d
21 SEG c
22 SEG b
23 SEG a
24 HEATER -
25 ALWAYS 5V
26 REMOCON
27 GND
TO CP-1(SY-A) CN301
RR701
SIG 1
VDD 2
VSS 3
IR-RECEIVER
A7001: 1AV4T41B00800 or 1AV4T41B00801
RR701: 1AC4U20A01300 or 1AC4U20A01700

A7001 DISPLAY (FLD) GRID/ANODE ASSIGNMENT DRAWING & TABLE

GRID & SEGMENT ASSIGNMENT



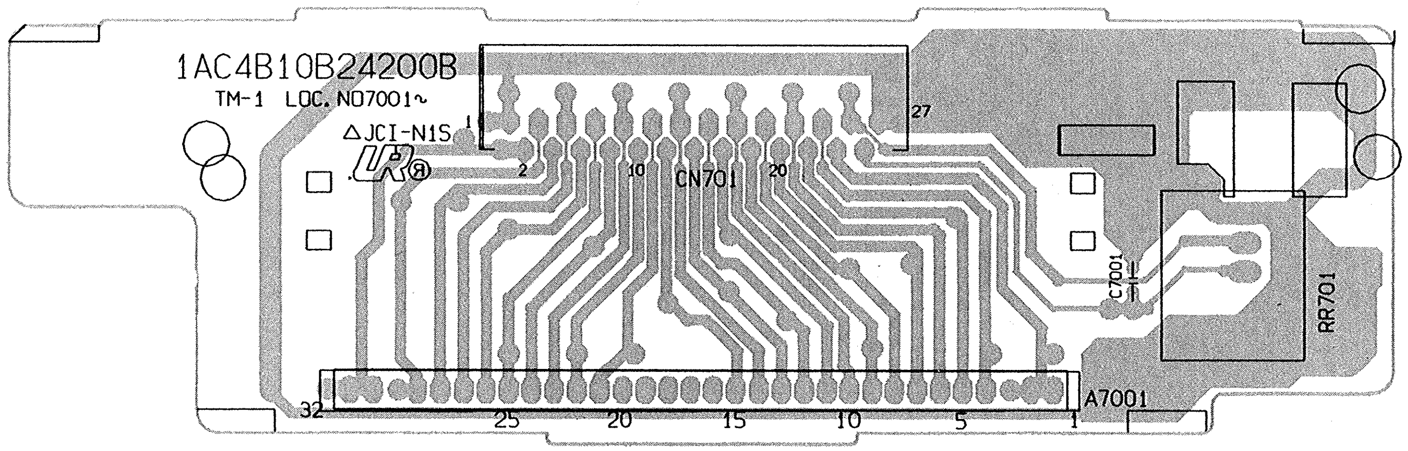
9G
8G
7G
6G
5G
4G
3G
2G
1G
ST BIL
PR
L R
REC
AUTO
EP
a b c d e f g m n
col 1
col 2
VCR
VPS
PDC
DATE
LP
OK

ANODE CONNECTION

GRID / SEGMENT	9G	8G	7G	6G	5G	4G	3G	2G	1G
a	ST	PR	L	◁	▷	REC	▮▮	AUTO	EP
b	n	—	n	n	—	—	n	—	n
c	a	a	a	a	a	a	a	a	a
d	b	b	b	b	b	b	b	b	b
e	c	c	c	c	c	c	c	c	c
f	d	d	d	d	d	d	d	d	d
g	e	e	e	e	e	e	e	e	e
h	f	f	f	f	f	f	f	f	f
i	g	g	g	g	g	g	g	g	g
j	m	m	m	m	m	m	m	m	m
k	BIL	—	VPS	—	col 2	—	—	col 1	—
l	VCR	●●	R	M	PDC	◲	DATE	LP	OK

GR-00800

TM-1 P.W.B.



1AC4B10B24200B
TM-1 LOC. NO7001~
△JCI-N1S
CN701
1
2
10
20
27
C7001
RR701
A7001
32
25
20
15
10
5
1